BUSHKOVA, M.M.

Brigades of volunteer controllers in pharmacies. Farmatsev. zhur. 17 no.5:65-68 '62. (MIRA 17:9)

1. TSentral'naya nauchno-issledovatel'skaya aptechnaya laboratoriya Glavnogo aptechnogo upravleniya Ministerstva zdravookhraneniya UkrSSR.

BUSHKOVA, M.M.

Importance of Russian pharmacopoeias in improving the quality of medical remedies. Farmatsev. zhur. 18 no.1:51-58 '63. (MIRA 17:10)

1. TSentral'naya nauchno-issledovatel'skaya aptechnaya laboratoriya Glavnogo aptechnogo upravleniya Ministerstva zdravookhraneniya UkrSSR.

BUSHKOVA, M.M.

Role of soviet scientists in the development of control on pharmacy resources. Farmatsev. zhur. 18 no.5:45-48 '63.
(MIRA 17:8)

1. TSentral'naya nauchno-issledovatel'skaya aptechnaya laboratoriya Glavnogo aptechnogo upravleniya Ministerstva zdravookhraneniya UkrSSR.

BUSHKOVA, M.M.; YAMPOL'SKAYA, M.M. [IAmpol's'ka, M.M.]

Plea for increased prepared drug production. Farmatsev. zhur. 19 no. 4:3-5 '64. (MIRA 17:11)

1. TSentral'naya nauchno-issledovatel'skaya aptechnaya laboratoriya Glavnogo aptechnogo upravleniya Ministerstva zdravookhraneniya UkrSSR.

BUSHKOVA, M.M.

Activities of the board of the Ukrainian Scientific Pharmaceutical Society in 1963. Farmatsev. zhur. 19 no.4:72-75 '64. (MIRA 17:11)

1. Upravleniye Ukrainskogo nauchnogo farmatsevticheskogo obshchestva.

BUSHKOVA, M.M.

Work accomplished by the Ukrainian Scientific Pharmaceutical Society in 1964. Farmatsev. zhur. 20 no.5:89-92 '65.
(MIRA 18:11)

1. Upravleniye Ukrainskogo nauchnogo farmatsevticheskogo obshchestva.

BUSHKOVA, M.N.

Results of work of laboratories for control and analysis of quality of drugs in Ukraina. Aptech. delo, Moskva 2 no.6:15-17 Nov-Dec 1953. (CIML 25:5)

1. Kiev.

BUSHKOVA, M.M.; GUBSKIY, I.M.; MINIOVICH, I.A.

Ukrainian pharmaceutical conference. Apt.delo 6 no.4:63-68 Jl-Ag '57.
(MLRA 10:9)

1. Chleny Pravleniya Ukrainskogo nauchno-farmatsevticheskogo obshchestva
(PHARMACY)

BUSHKOVA, M.N.

Achievements in the organization of quality control of medicines and drugs in the Ukraine. Apt.delo 6 no.5:25-31 S-O '57.
(UKRAINE--PHARMACY--QUALITY CONTROL) (MIRA 10:11)

POZDNYAKOVA, Valentina Trofimovna; BUSHKOVA, M.N., red.; LOKHMATYY, Ye.G., tekhnred.

[Microcrystalloscopic reactions for alkaloids] Mikrokristalloskopicheskie reaktsii na alkaloidy. Kiev, Gos.med.izd-vo USSR, 1960. 162 p. (MIRA 13:9)

(ALKALOIDS)

VAYSMAN, G.A. [Vaisman, H.A.]; BUSHKOVA, M.N. [Bushkova, M.M.]; KOGAN, A.M. [Kohan, O.M.]

Rapid analysis of drugs using reactive papers. Farmatsev. zhur. 17 no.1:15-21 '62. (MIRA 15:6)

1. TSentral'naya nauchno-issledovatel'skaya aptechnaya laboratoriya Glavnogo aptechnogo upravleniya Ministerstva zdravookhraneniya USSR.
(DRUGS--ADULTERATION AND ANALYSIS)
(INDICATORS AND TEST PAPERS)

BUSHKOVA, M.M.

Quality control of medicinal resources during the prerevolutionary period. Farmatsev. zhur. 17 no.1:62-66 '62. (MIRA 15:6)

1. TSentral'naya nauchno-issledovatel'skaya aptechnaya laboratoriya Glavnogo aptechnogo upravleniya Ministerstva zdravookhraneniya USSR.

(PHARMACY)

VAYSMAN, G.A.; BUSHKOVA, M.N.; RAPAPORT, L.I.

Qualitative analysis of vitamin-containing drugs. Apt. delo 12 no.4:68-71 Jl-Ag '63. (MIRA 17:2)

1. TSentral'naya nauchno-issledovatel'skaya aptechnaya laboratoriya Glavnogo aptechnogo upravleniya Ministerstva zdravookhraneniya UkrSSR.

GUBSKIY, I.M.; BUSHKOVA, M.N.; MINIOVICH, I.A.

In the Ukranian Scientific-Pharmaceutical Society. Apt. delo. no.5:81-83 S-O '62. (MIRA 17:5)

BUSHKOVA, M.N.; MINIOVICH, I.A.

Conference of readers of the periodical "Aptechnoe delo" in Kiev. Apt. delo 11 no.6:74-75 N-D'62 (MIRA 17:7)

BUSHKOVA, Mariya Nikolayevna; VAYSMAN, Grigoriy Aronovich; RAPAPORT, Lev Izrailevich; KAGAN, F.Ye., red.

[Manual on drug analysis under drugstore conditions] Rukovodstvo po analizu lekarstv v usloviiakh apteki. Kiev, Zdorov'ia, 1965. 286 p. (MIRA 19:1)

L 24833-66 EWT(d)/EWP(v)/EWP(k)/EWP(h)/EWP(l) IJP(c) EC

ACC NR: AP6010774 SOURCE CODE: UR/0146/66/009/001/0064/0068

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B

AUTHOR: Sharovatov, V. T.; Bushlya, A. S.

ORG: Leningrad Institute of Mechanics (Leningradskiy mekhanicheskiy institut)

TITLE: A digital servosystem for proportional control

SOURCE: IVUZ. Priborostroyeniye, v. 9, no. 1, 1966, 64-68

TOPIC TAGS: servosystem, automatic control, signal coding, logic circuit

ABSTRACT: The authors describe a digital servosystem with a 13-digit "shaft-code" converter. The device incorporates an ordinary modular system made up of a master unit (digital computer), analyzer ("shaft-code" on the actuating motor axis), comparator, decoder, amplifier and motor (EM-2M). The 13-digit "shaft-code" converter is a two-stage unit of the transformer type which uses Barker code. The code is taken off from the converter by a sequential digit search system in the form of a combination 16-output diode matrix with a control counter made up of four flip-flops. The search pulse taken off from the matrix is fed through an emitter-follower and an amplifier to the search winding of the converter core. Since the transformation ratio of the coil pair is 6:1, the signal on the readout winding is 1/6 of that on the search winding and therefore must be amplified. This signal must also be reshaped due to considerable distortion of the pulse in the readout winding by high capacitance between turns, in-

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accuracy in setting the elements etc. Barker code is converted to binary code by the algorithm: $i_n = A_n i_{n-1} + B_n i_{n-1}$. This algorithm is carried out by a circuit which uses two AND gates controlled by the two halves of the second flip-flop in the shift register which converts the series code fed from the "shaft-code" pickup to parallel code. This gives possibilities for AND and NOT logic. The converted code is fed to the register from which it may be read out in parallel form when a signal is sent from the control unit. This control unit gives out the following command signals: 1. reset in the adder; 2. input of number A; 3. input of number B; 4. reset in the register of the "code-voltage" converter; 5. difference input in the "code-voltage" converter. The control unit contains a cadence pulse generator, a distributive device for generating the command signal, amplifiers and emitter-followers for decoupling the circuits. The comparator is a 13-digit parallel-action adder with sequential carry. This adder consists of a series of flip-flops, pulse amplifiers with differentiating inputs and delay lines. A schematic diagram of this adder is given and the addition process is described. Schematic diagrams are also given for the decoder and the motor reversal unit. The signal in the digital servosystem is actually quantized with respect to time and level. However, it may be assumed for all practical purposes that signal quantization takes place with respect to level only, since the period of quantization with respect to time is much less than the time constant of the motor, which is the greatest time constant in the system. Orig. art. has: 3 figures. [14]

SUB CODE: 09/13/ SUBM DATE: 26Oct64/ ORIG REF: 000/ OTH REF: 000

Card 2/2 dda

BUSHKOVA, Nina Georgiyevna; SHEVCHUK, L.V., red.; KHOLODYL'KIN, A.A., tekhn. red.

[Omsk Combine Assembly Plant] Omskii kombainosborochnyi, [Omsk] Omskoe obl. knizhnoe izd-vo, 1957. 45 p. (MIRA 11:9)
(Omsk—Combines (Agricultural machinery))

LYSENKOV, Nikolay Konstantinovich; BUSHKOVICH, Vyacheslav Iosifovich; PRIVES, Mikhail Grigor'yevich, prof.; GINZBURG, V.V., red.; RULEVA, M.S., tekhn.red.

[Textbook of normal human anatomy] Uchebnik normal'noi anatomii cheloveka. Pod obshchei red. M.G.Privesa. Izd.5., dop. i perer. Moskva, Gos.izd-vo med.lit-ry, Leningr.otd-nie, 1958. 783 p. (MIRA 12:7)

(ANATOMY, HUMAN)

BUSHKOVSKIY, N.

Textile Industry

A celebration in honor of the oldest factory workers. Klub 2, No. 3, 1953.

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June 1953. UNCL.

BUSHKO-ZHUK, M.M.

Conformal system of metrical geometries. Dop.AN URSR no.11:1455-1457 '60. (MIRA 13:11)

1. Vychislitel'nyy tsentr AN USSR. Predstavleno akademikom AN USSR B.V.Gnedenko.

(Geometry)

BUSHKUNAS, P. I., Cand Tech Sci -- (diss) "Carbonate concrete on dolomite lime and some of its properties." Kaunas, 1960. 22 pp with graphs; (Kaunas Polytechnic Inst); 150 copies; free; (KL, 17-60, 152)

BUSHKUNAS, P.I. [Buškunas, P.]; NYANORTA, A.V. [Nonorta, A.]

Bonding of reinforcing bars to lime concrete. Trudy AN Lit. SSR Ser. B no.4:203-212 '62. (MIRA 18:3)

1. Institut stroitel'stva i arkhitektury AN Litovskoy SSR.

NAMEDOV, YAZOV, O.N.; SHULIKA, M.N.; GLADYSHEVA, L. Ye.; BUSHLYAKOVA, K.D.

Effect of ecologic factors on the development of caterpillars and the incidence of jaundice in silkworms in Turkmenia. Izv. AN Turk. SSR. Ser. biol. nauk no.3:25-29 '64 (MIRA 18:2)

1. Institut ecologii i parazitologii AN Turkmenskoy SSR.

MAMEDNIYAZOV, O.N.; SHULIKA, M.N.; GLADYSHEVA, L.Ye.; BUSHLYAKOVA, N.D.
BIRYUKOVA, N.V.

Effect of vitamins B_{12} and B_6 on the growth and development of silkworm caterpillars. Izv. AN Turk. SSR. Ser. biol. nauk no.3:50-54 '65. (MIRA 18:9)

1. Institut zoologii i parazitologii AN Turkmenskoy SSR.

GEL'FMAN, Georgiy Nisonovich; DANYUSHEVSKIY, Viktor Solomonovich; KHLEBNIKOV, N.V., st. inzh., red.; BUSHMAKIN, A.P., st. inzh., red.; OSTASHEVSKAYA, G.A., red.

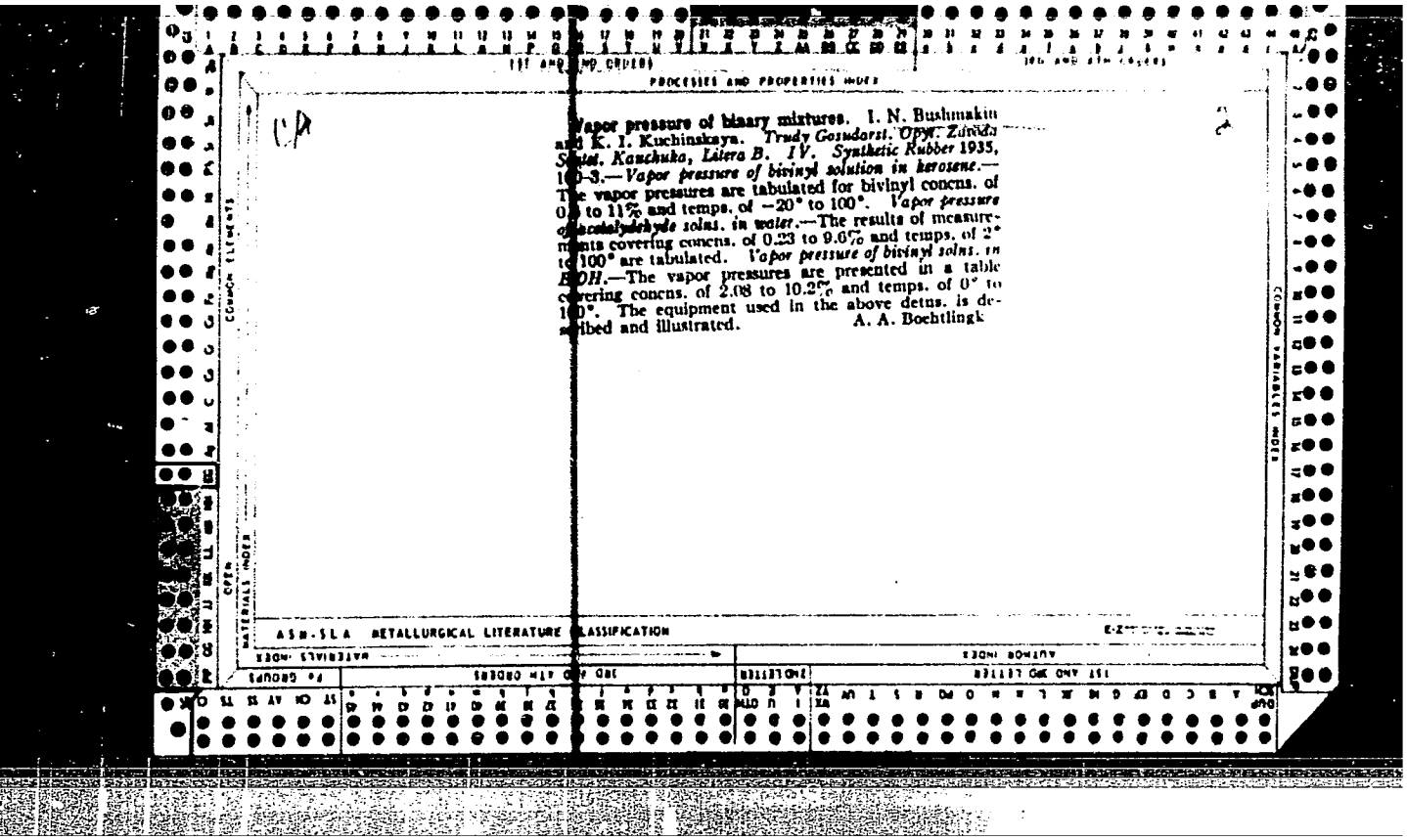
[Corrosion of cement stone in oil wells] Korroziia tsementnogo kamnia v neftianykh skvazhinakh. Ufa, Izd-vo "Bashkortostan," 1964. 39 p. (MIRA 18:10)

1. Otdel bureniya Ob"yedineniya Bashkirskoy neftyanoy promyshlennosti (for Khlebnikov). 2. Tekhnicheskiy otdel Ob"yedineniya Bashkirskoy neftyanoy promyshlennosti (for Bushmakin).

BUGROV, V.A.; BUSHMAKIN, E.D.

Determination of the optimum extent of the complete repair of wells for excluding bottom waters. Izv. vys. ucheb. zav.; neft.' i gaz 3 no.11:113-117 '60. (MIRA 14:1)

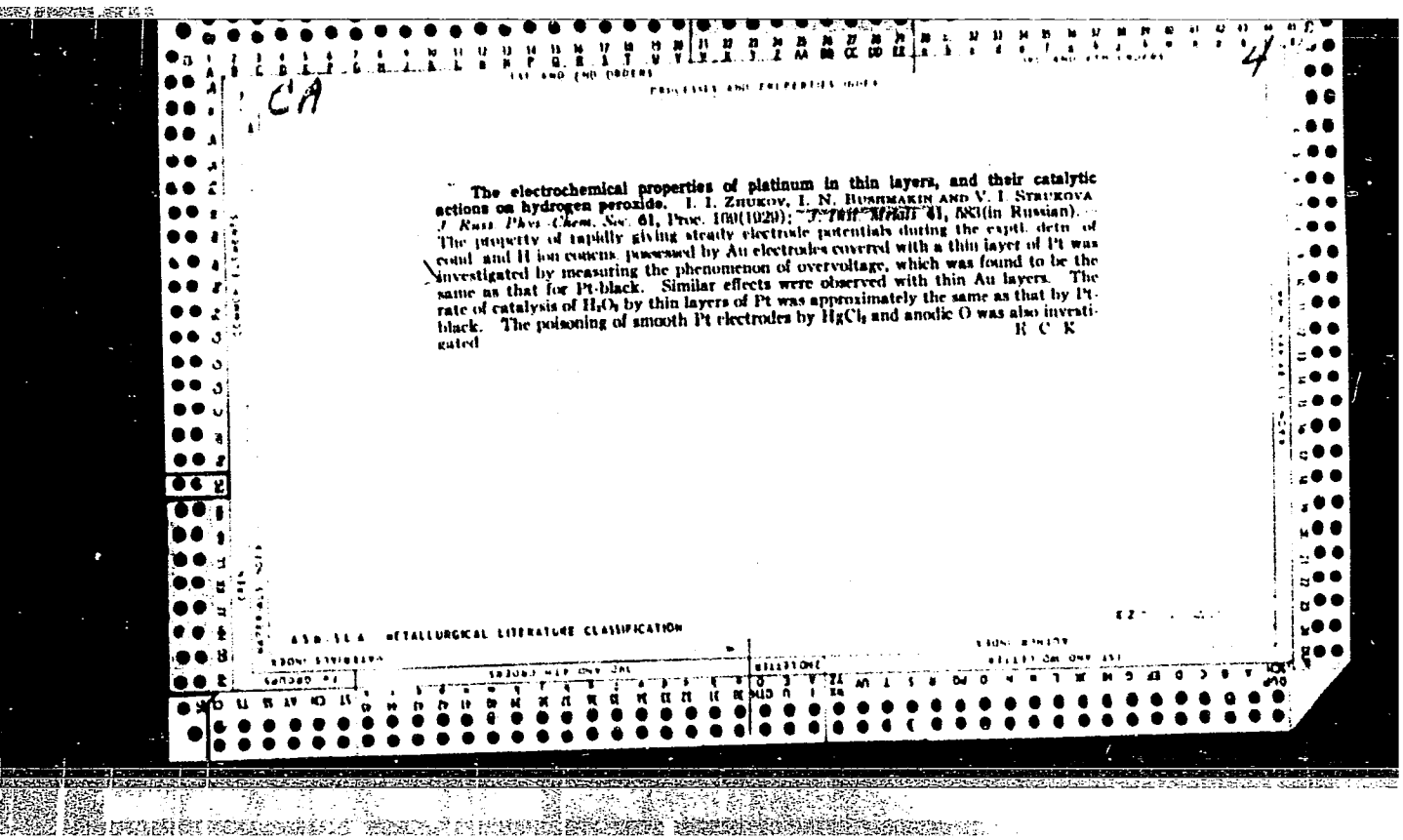
1. Ufimskiy neftyanoy institut.
(Oil fields—Production methods)



PROCESSES AND PROPERTIES INDEX

Vapor pressure of binary mixtures. I. N. Bushmakin and K. I. Kuchinskaya. *Trudy Gosudarst. Opyt. Zavoda Sbtst. Kauchuka, Litera B. IV. Synthetic Rubber* 1935, 100-3.—*Vapor pressure of bivinyl solution in kerosene.*—The vapor pressures are tabulated for bivinyl concns. of 0.5 to 11% and temps. of −20° to 100°. *Vapor pressure of acetaldehyde solns. in water.*—The results of measurements covering concns. of 0.23 to 9.6% and temps. of 2° to 100° are tabulated. *Vapor pressure of bivinyl solns. in EtOH.*—The vapor pressures are presented in a table covering concns. of 2.08 to 10.2% and temps. of 0° to 100°. The equipment used in the above detns. is described and illustrated. A. A. Boehtlingk

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



CA

The electrochemical properties of platinum in thin layers, and their catalytic actions on hydrogen peroxide. I. I. Zhukov, I. N. Bushmakin and V. I. Strukova. *J. Russ. Phys. Chem. Soc.* 61, Proc. 100(1929); *J. Phys. Chem.* 61, 883(in Russian). The property of rapidly giving steady electrode potentials during the expt. detn. of coul. and H ion concns. possessed by Au electrodes covered with a thin layer of Pt was investigated by measuring the phenomenon of overvoltage, which was found to be the same as that for Pt-black. Similar effects were observed with thin Au layers. The rate of catalysis of H_2O_2 by thin layers of Pt was approximately the same as that by Pt-black. The poisoning of smooth Pt electrodes by $HgCl_2$ and anodic O was also investigated

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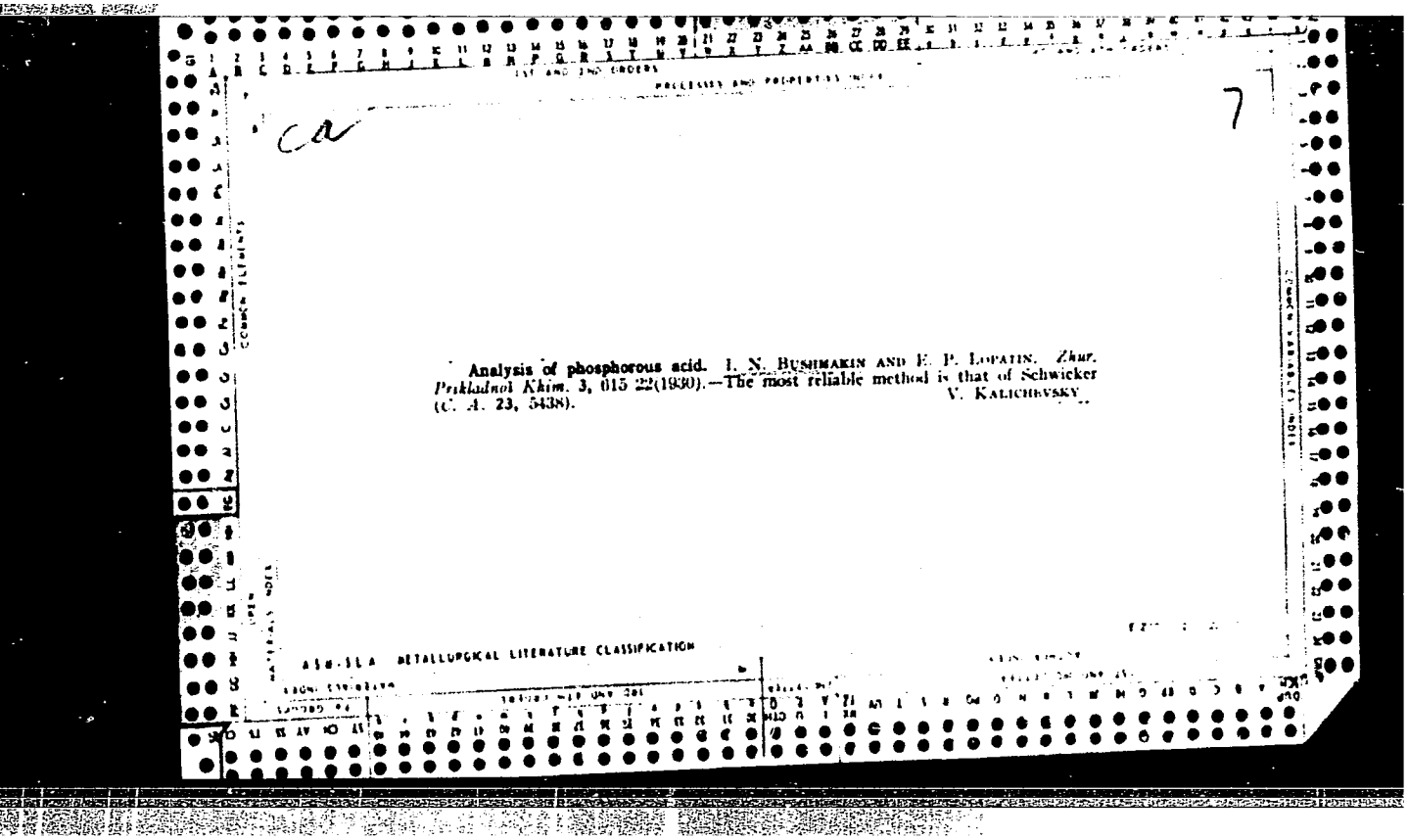
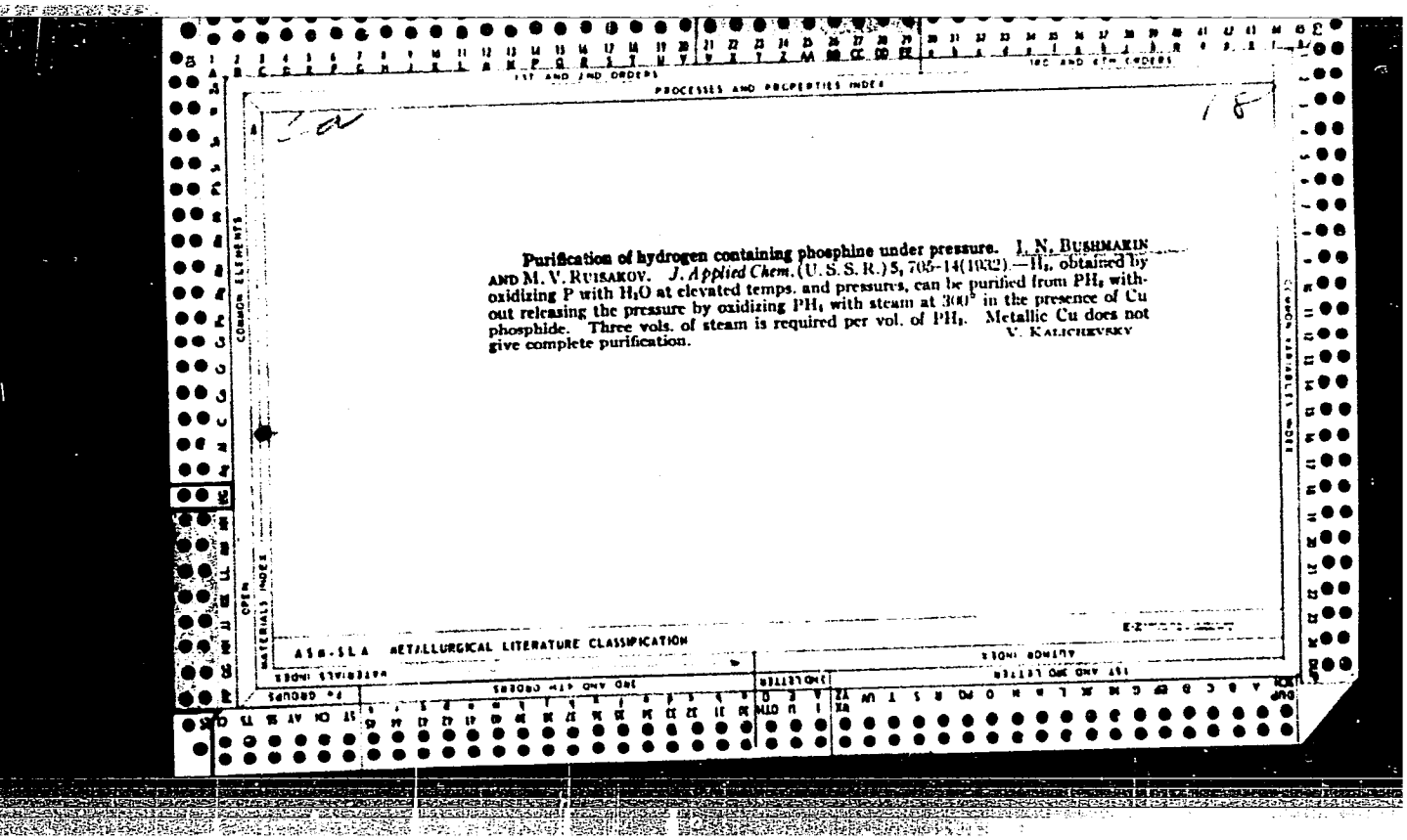
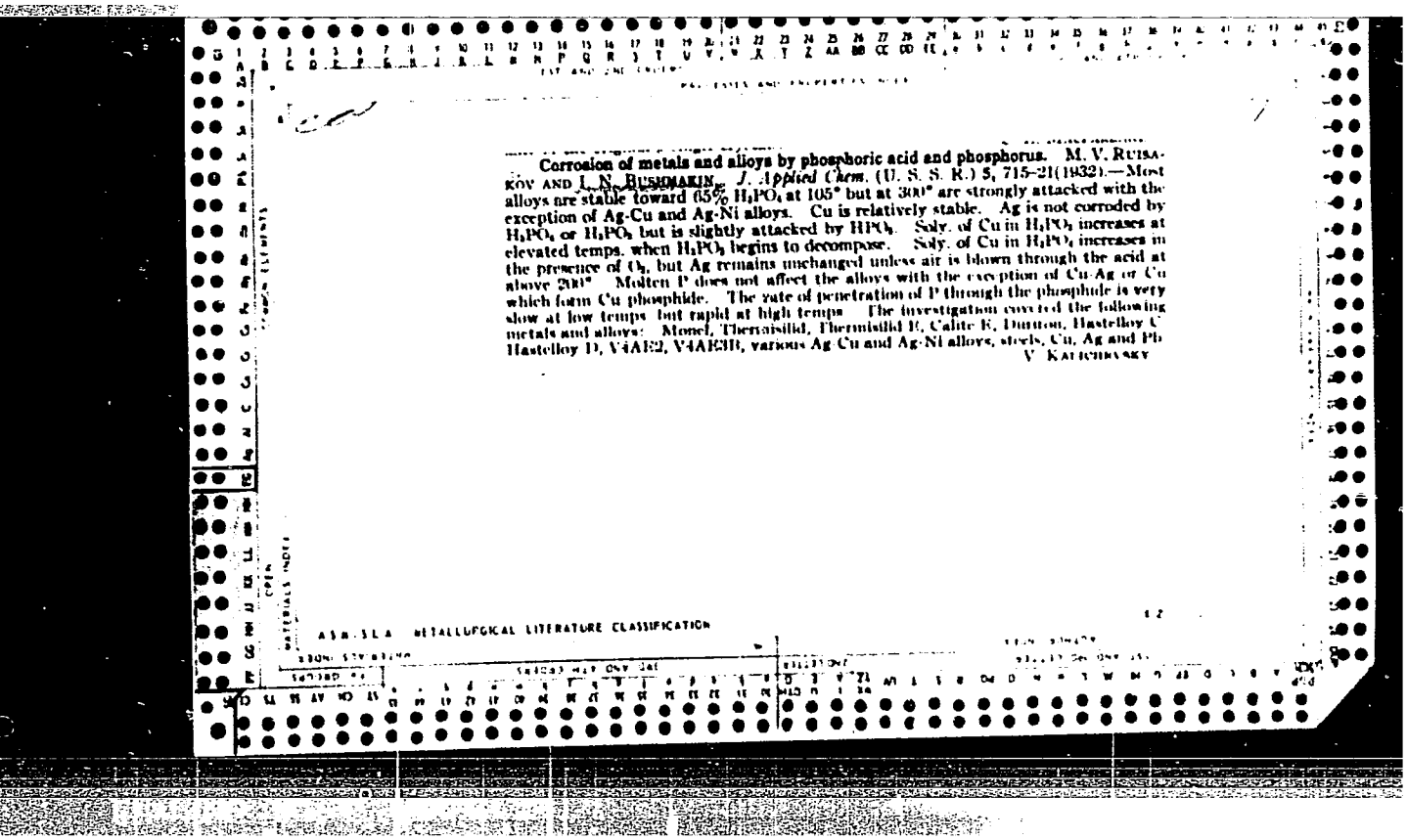


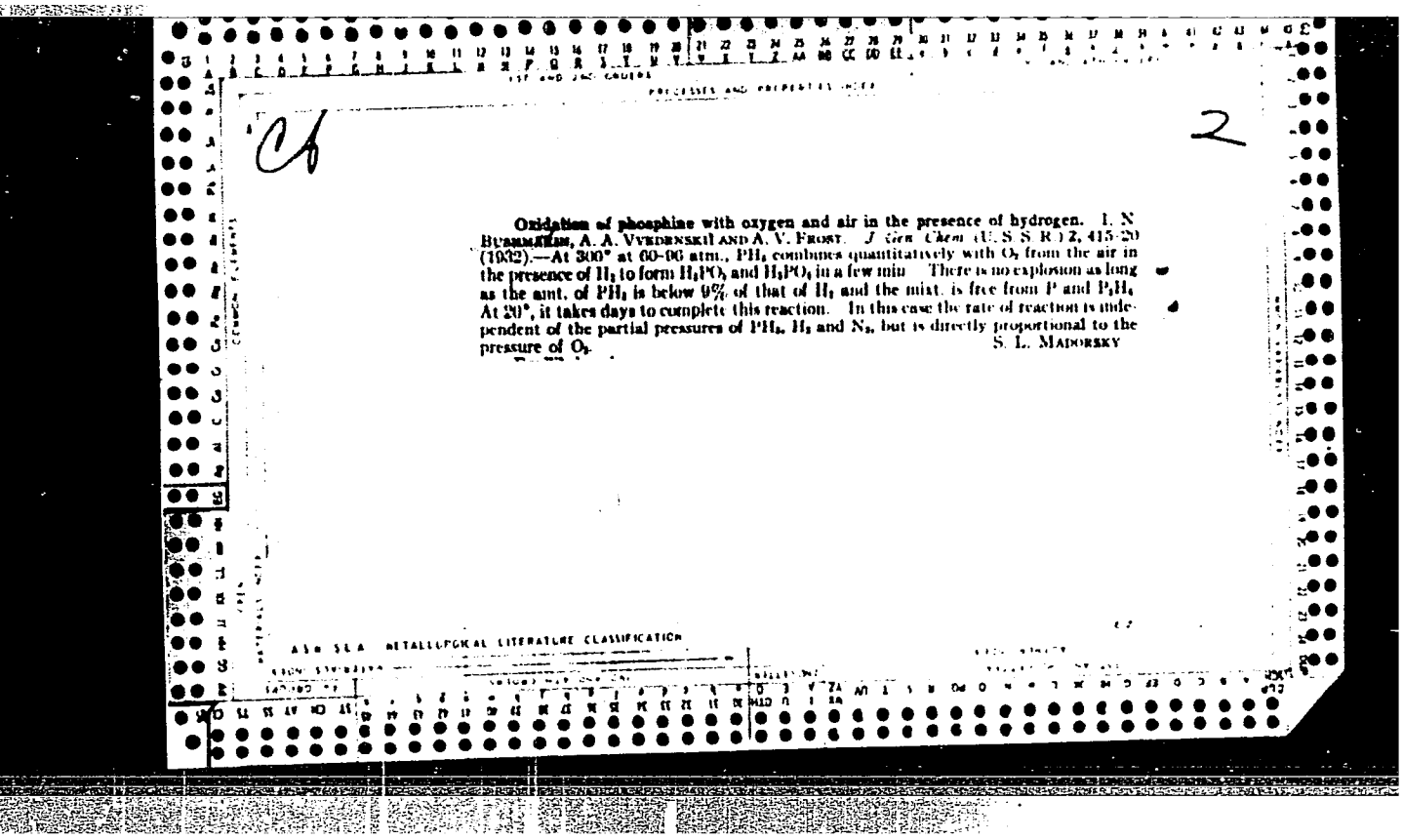
Analysis of phosphorous acid. I. N. Bushmakin and E. P. Lopatin. *Zhur. Prikladnoi Khim.* 3, 615-22(1930).—The most reliable method is that of Schwicker (*C. A.* 23, 5438).
V. Kalichevsky



Purification of hydrogen containing phosphine under pressure. I. N. BUSHMAKIN AND M. V. RUISAKOV. *J. Applied Chem.* (U. S. S. R.) 5, 705-14(1932).—H_2, obtained by oxidizing P with H_2O at elevated temps. and pressures, can be purified from PH_3 without releasing the pressure by oxidizing PH_3 with steam at 300° in the presence of Cu phosphide. Three vols. of steam is required per vol. of PH_3. Metallic Cu does not give complete purification.
V. KALICHEVSKY



Corrosion of metals and alloys by phosphoric acid and phosphorus. M. V. Rubsakov and L. N. Bushmakin. *J. Applied Chem.* (U. S. S. R.) 5, 715–21(1932).—Most alloys are stable toward 65% H_3PO_4 at 105° but at 300° are strongly attacked with the exception of Ag-Cu and Ag-Ni alloys. Cu is relatively stable. Ag is not corroded by H_3PO_4 or $H_4P_2O_7$ but is slightly attacked by HPO_3. Soly. of Cu in H_3PO_4 increases at elevated temps. when H_3PO_4 begins to decompose. Soly. of Cu in H_3PO_4 increases in the presence of O_2 but Ag remains unchanged unless air is blown through the acid at above 200°. Molten P does not affect the alloys with the exception of Cu-Ag or Cu which form Cu phosphide. The rate of penetration of P through the phosphide is very slow at low temps but rapid at high temps. The investigation covered the following metals and alloys: Monel, Thersaisilid, Thermisilid E, Calite E, Durimet, Hastelloy C, Hastelloy D, V4AE2, V4AE3B, various Ag-Cu and Ag-Ni alloys, steels, Cu, Ag and Pb.
V. Karchevsky



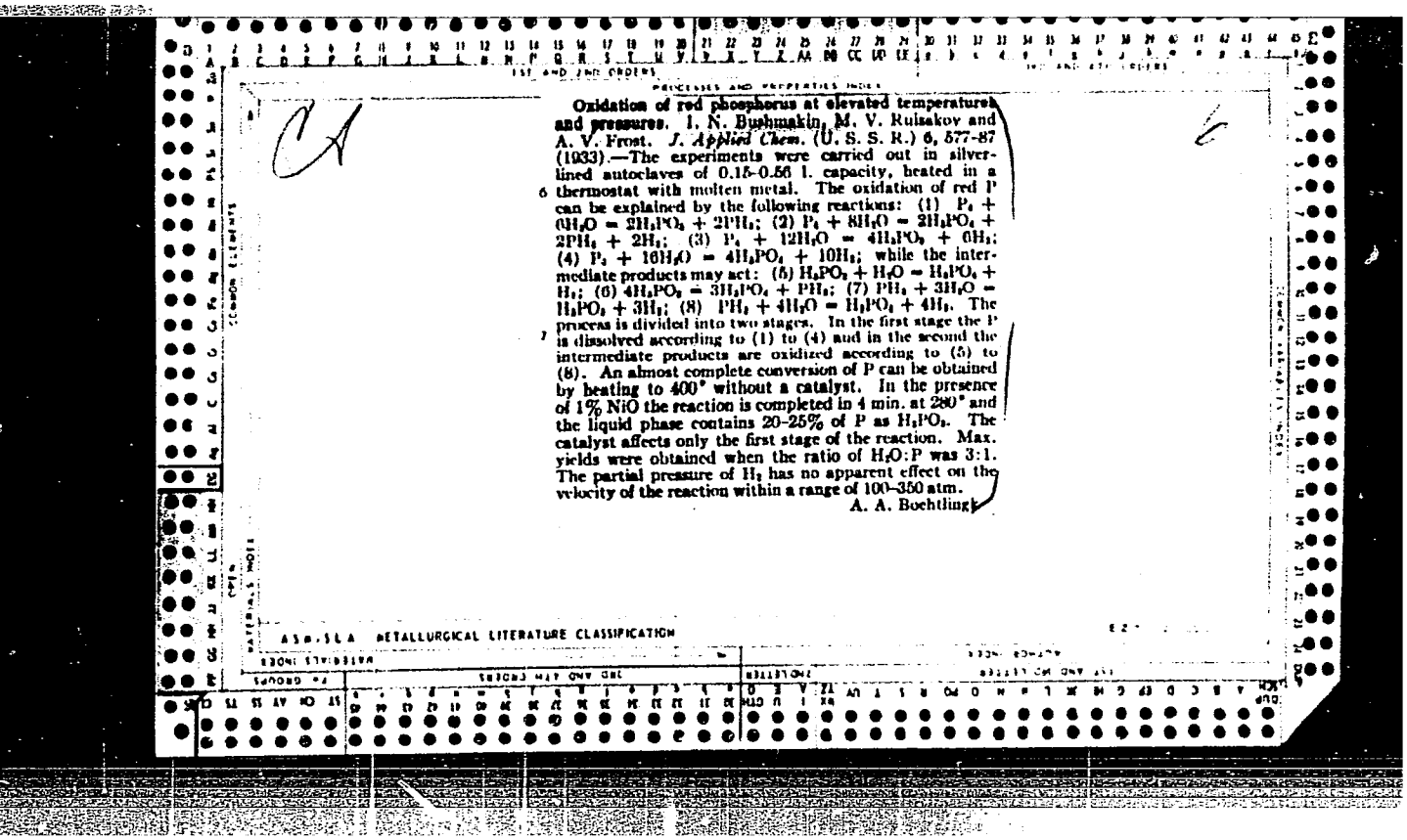
Ch

2

Oxidation of phosphine with oxygen and air in the presence of hydrogen. I. N. Bramskin, A. A. Vvedenskii and A. V. Frost. *J. Gen. Chem.* (U. S. S. R.) 2, 415-20 (1932).—At 300° at 60-96 atm., PH_3 combines quantitatively with O_2 from the air in the presence of H_2 to form H_3PO_3 and H_3PO_4 in a few min. There is no explosion as long as the amt. of PH_3 is below 9% of that of H_2 and the mixt. is free from P and P_2H_4. At 20°, it takes days to complete this reaction. In this case the rate of reaction is independent of the partial pressures of PH_3, H_2 and N_2, but is directly proportional to the pressure of O_2.

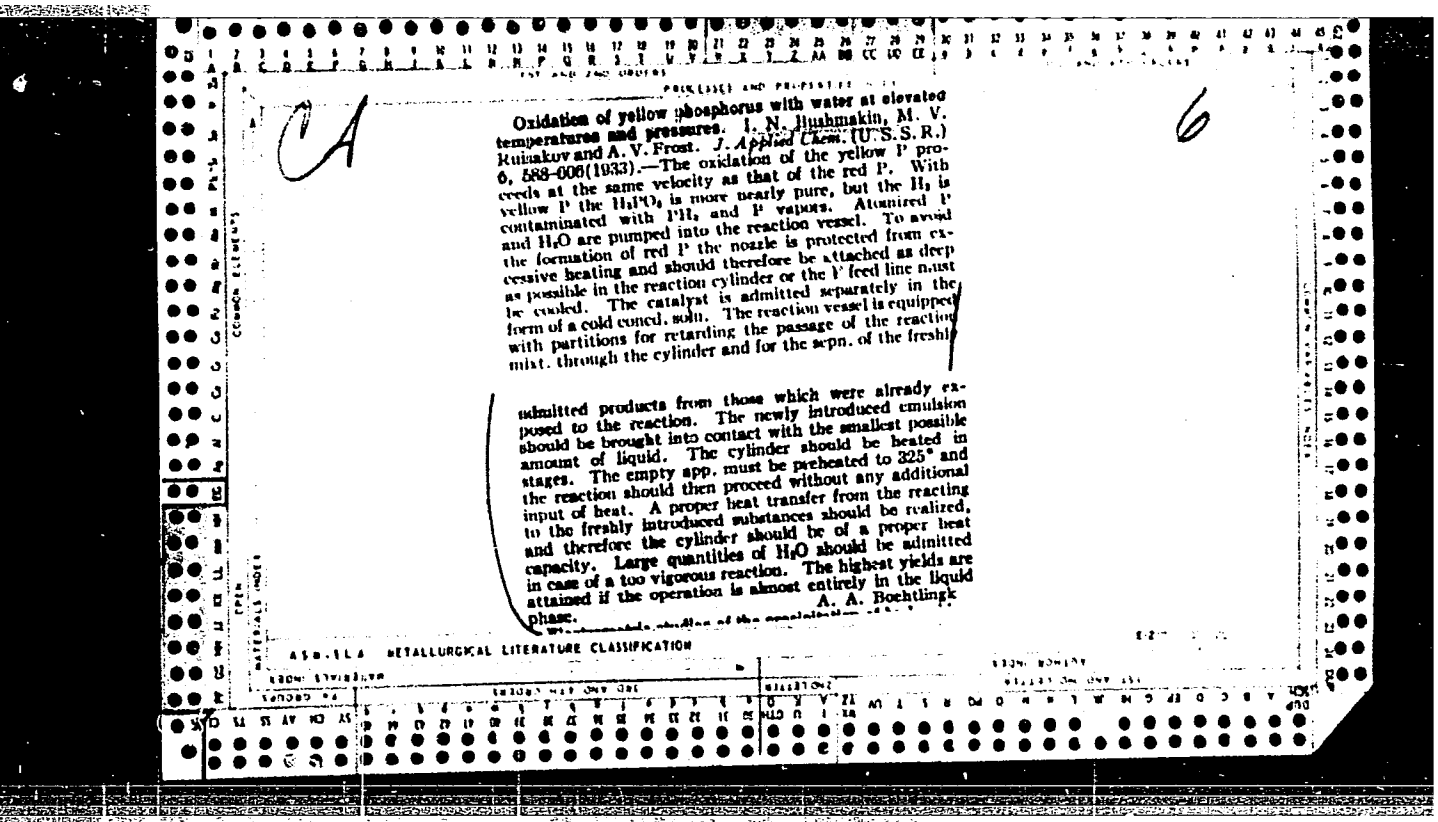
S. L. Madorsky

A 1 a S E A METALLURGICAL LITERATURE CLASSIFICATION



Oxidation of red phosphorus at elevated temperatures and pressures. I. N. Bushmakin, M. V. Rulsakov and A. V. Frost. *J. Applied Chem.* (U. S. S. R.) 6, 577–87 (1933).—The experiments were carried out in silver-lined autoclaves of 0.15–0.56 l. capacity, heated in a thermostat with molten metal. The oxidation of red P can be explained by the following reactions: (1) $P_4 + 6H_2O = 2H_3PO_3 + 2PH_3$; (2) $P_4 + 8H_2O = 2H_3PO_4 + 2PH_3 + 2H_2$; (3) $P_4 + 12H_2O = 4H_3PO_3 + 6H_2$; (4) $P_4 + 16H_2O = 4H_3PO_4 + 10H_2$; while the intermediate products may act: (5) $H_3PO_3 + H_2O = H_3PO_4 + H_2$; (6) $4H_3PO_3 = 3H_3PO_4 + PH_3$; (7) $PH_3 + 3H_2O = H_3PO_3 + 3H_2$; (8) $PH_3 + 4H_2O = H_3PO_4 + 4H_2$. The process is divided into two stages. In the first stage the P is dissolved according to (1) to (4) and in the second the intermediate products are oxidized according to (5) to (8). An almost complete conversion of P can be obtained by heating to 400° without a catalyst. In the presence of 1% NiO the reaction is completed in 4 min. at 280° and the liquid phase contains 20–25% of P as H_3PO_3. The catalyst affects only the first stage of the reaction. Max. yields were obtained when the ratio of H_2O:P was 3:1. The partial pressure of H_2 has no apparent effect on the velocity of the reaction within a range of 100–350 atm.

A. A. Boehtling

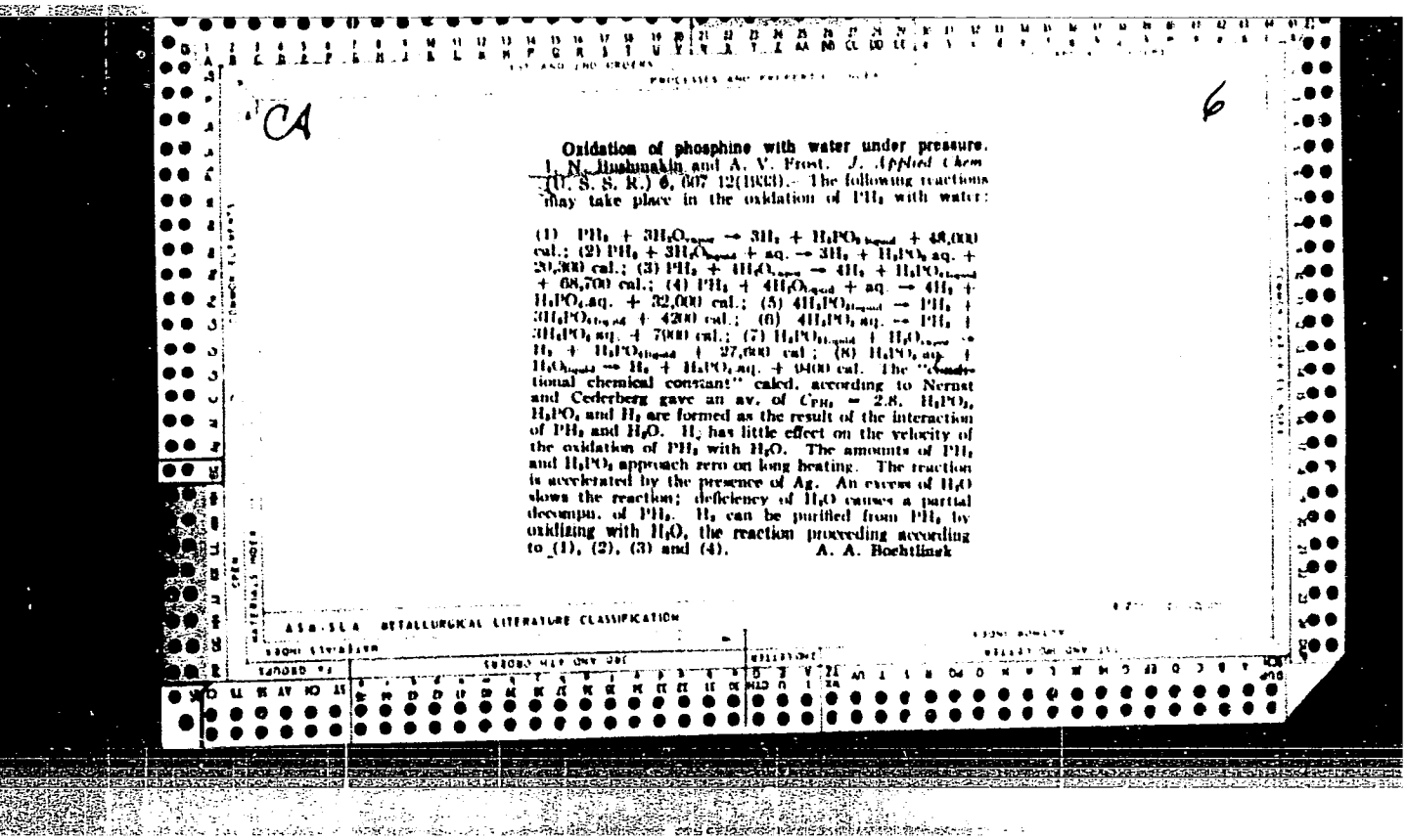


CA 6

Oxidation of yellow phosphorus with water at elevated temperatures and pressures. I. N. Ilushmakin, M. V. Rubakov and A. V. Frost. *J. Applied Chem.* (U.S.S.R.) 6, 588–606(1933).—The oxidation of the yellow P proceeds at the same velocity as that of the red P. With yellow P the H_3PO_2 is more nearly pure, but the H_2 is contaminated with PH_3 and P vapors. Atomized P and H_2O are pumped into the reaction vessel. To avoid the formation of red P the nozzle is protected from excessive heating and should therefore be attached as deep as possible in the reaction cylinder or the P feed line must be cooled. The catalyst is admitted separately in the form of a cold concd. soln. The reaction vessel is equipped with partitions for retarding the passage of the reaction mixt. through the cylinder and for the sepn. of the fresh[ly] admitted products from those which were already exposed to the reaction. The newly introduced emulsion should be brought into contact with the smallest possible amount of liquid. The cylinder should be heated in stages. The empty app. must be preheated to 325° and the reaction should then proceed without any additional input of heat. A proper heat transfer from the reacting to the freshly introduced substances should be realized, and therefore the cylinder should be of a proper heat capacity. Large quantities of H_2O should be admitted in case of a too vigorous reaction. The highest yields are attained if the operation is almost entirely in the liquid phase.

A. A. Boehtlingk

A58.1L4 METALLURGICAL LITERATURE CLASSIFICATION

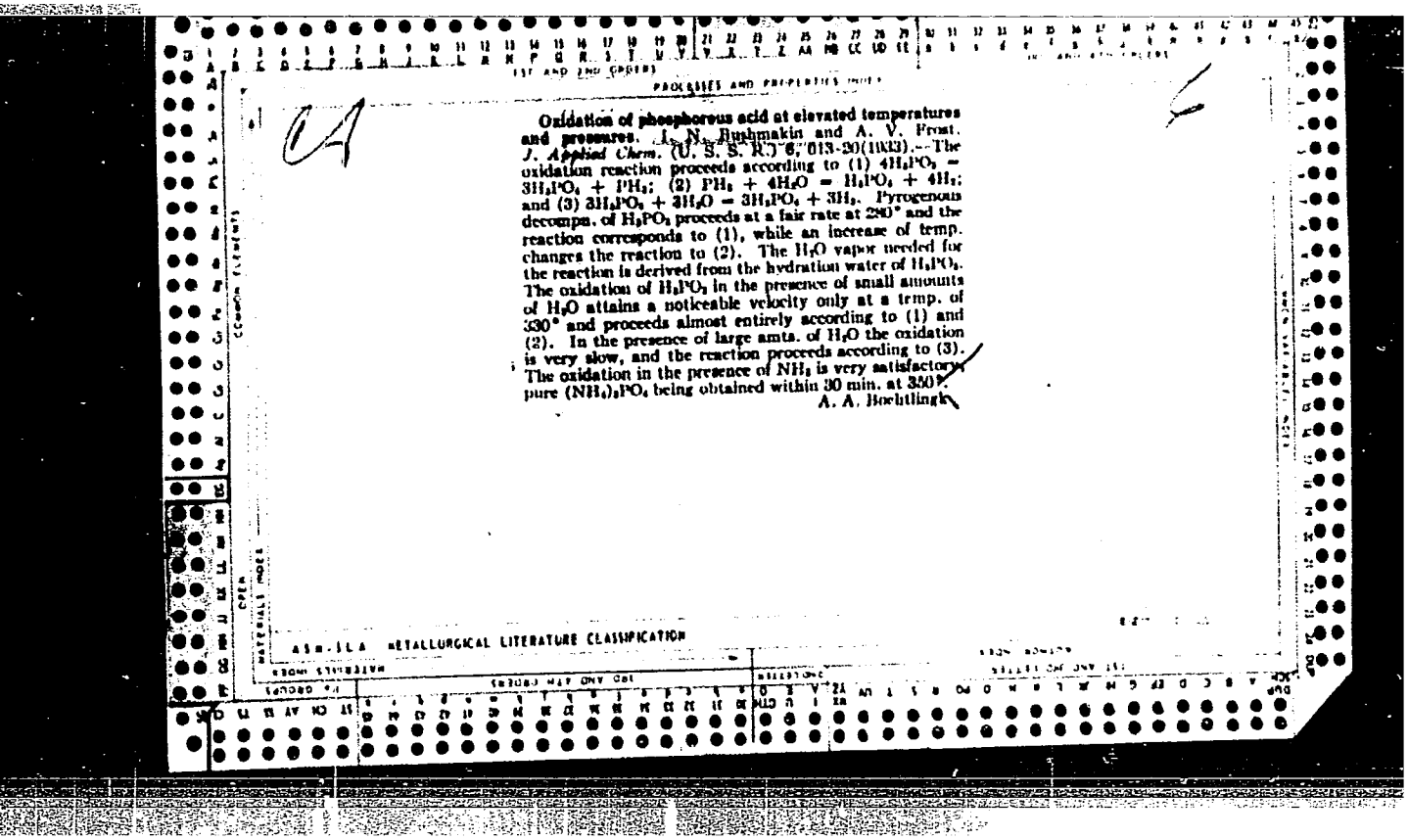


CA

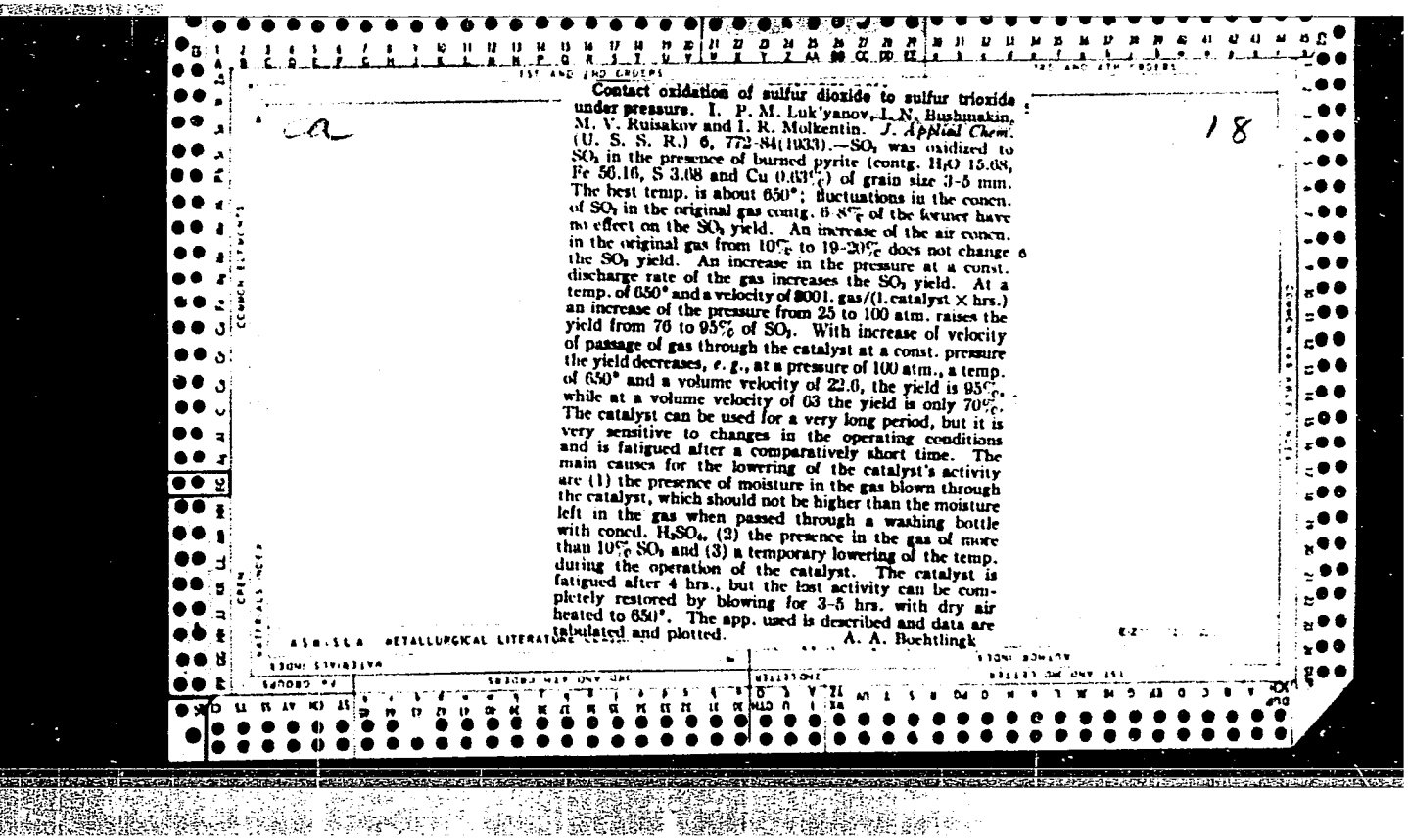
6

Oxidation of phosphine with water under pressure. I. N. Bushmakin and A. V. Frost. *J. Applied Chem. (U. S. S. R.)* **6**, 607-12(1933).—The following reactions may take place in the oxidation of PH_3 with water:

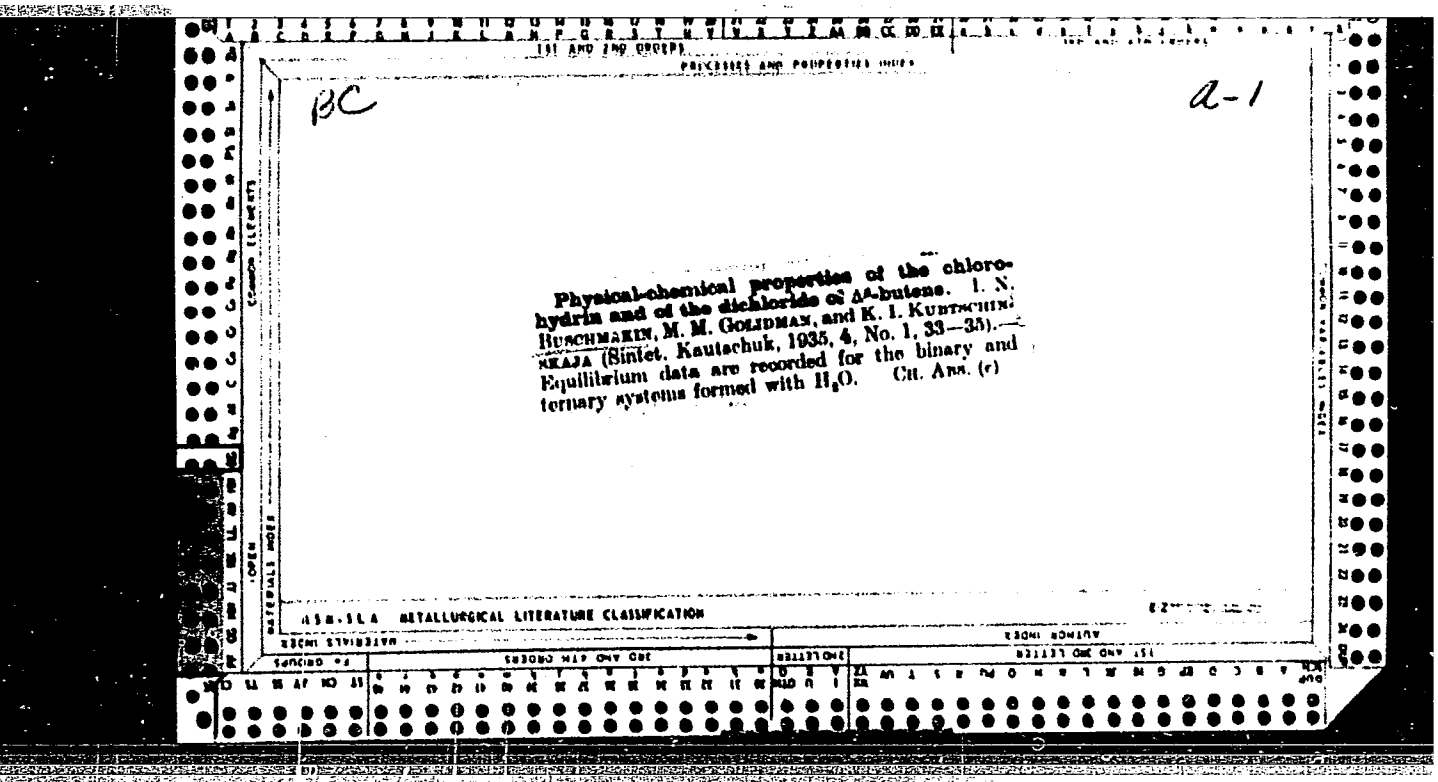
(1) $PH_3 + 3H_2O_{vapor} \rightarrow 3H_2 + H_3PO_{3\,liquid}$ + 48,000 cal.; (2) $PH_3 + 3H_2O_{liquid}$ + aq. $\rightarrow 3H_2 + H_3PO_3$ aq. + 39,800 cal.; (3) $PH_3 + 4H_2O_{vapor} \rightarrow 4H_2 + H_3PO_{4\,liquid}$ + 68,700 cal.; (4) $PH_3 + 4H_2O_{liquid}$ + aq. $\rightarrow 4H_2 + H_3PO_4$ aq. + 32,000 cal.; (5) $4H_3PO_{3\,liquid} \rightarrow PH_3 + 3H_3PO_{4\,liquid}$ + 4200 cal.; (6) $4H_3PO_3$ aq. $\rightarrow PH_3 + 3H_3PO_4$ aq. + 7000 cal.; (7) $H_3PO_{3\,liquid} + H_2O_{vapor} \rightarrow H_2 + H_3PO_{4\,liquid}$ + 27,600 cal.; (8) H_3PO_3 aq. + $H_2O_{liquid} \rightarrow H_2 + H_3PO_4$ aq. + 9400 cal. The "conditional chemical constant" calcd. according to Nernst and Cederberg gave an av. of $C_{PH_3} = 2.8$. H_3PO_3, H_3PO_4 and H_2 are formed as the result of the interaction of PH_3 and H_2O. H_2 has little effect on the velocity of the oxidation of PH_3 with H_2O. The amounts of PH_3 and H_3PO_3 approach zero on long heating. The reaction is accelerated by the presence of Ag. An excess of H_2O slows the reaction; deficiency of H_2O causes a partial decompn. of PH_3. H_2 can be purified from PH_3 by oxidizing with H_2O, the reaction proceeding according to (1), (2), (3) and (4). A. A. Boehtlingk



Oxidation of phosphorous acid at elevated temperatures and pressures. I. N. Rukhmakin and A. V. Frost. *J. Applied Chem.* (U. S. S. R.) 6, 613-20(1933).—The oxidation reaction proceeds according to (1) $4H_3PO_3 = 3H_3PO_4 + PH_3$; (2) $PH_3 + 4H_2O = H_3PO_4 + 4H_2$; and (3) $3H_3PO_3 + 3H_2O = 3H_3PO_4 + 3H_2$. Pyrogenous decompn. of H_3PO_3 proceeds at a fair rate at 280° and the reaction corresponds to (1), while an increase of temp. changes the reaction to (2). The H_2O vapor needed for the reaction is derived from the hydration water of H_3PO_3. The oxidation of H_3PO_3 in the presence of small amounts of H_2O attains a noticeable velocity only at a temp. of 330° and proceeds almost entirely according to (1) and (2). In the presence of large amts. of H_2O the oxidation is very slow, and the reaction proceeds according to (3). The oxidation in the presence of NH_3 is very satisfactory, pure $(NH_4)_3PO_4$ being obtained within 30 min. at 350°.
A. A. Boehtlingk



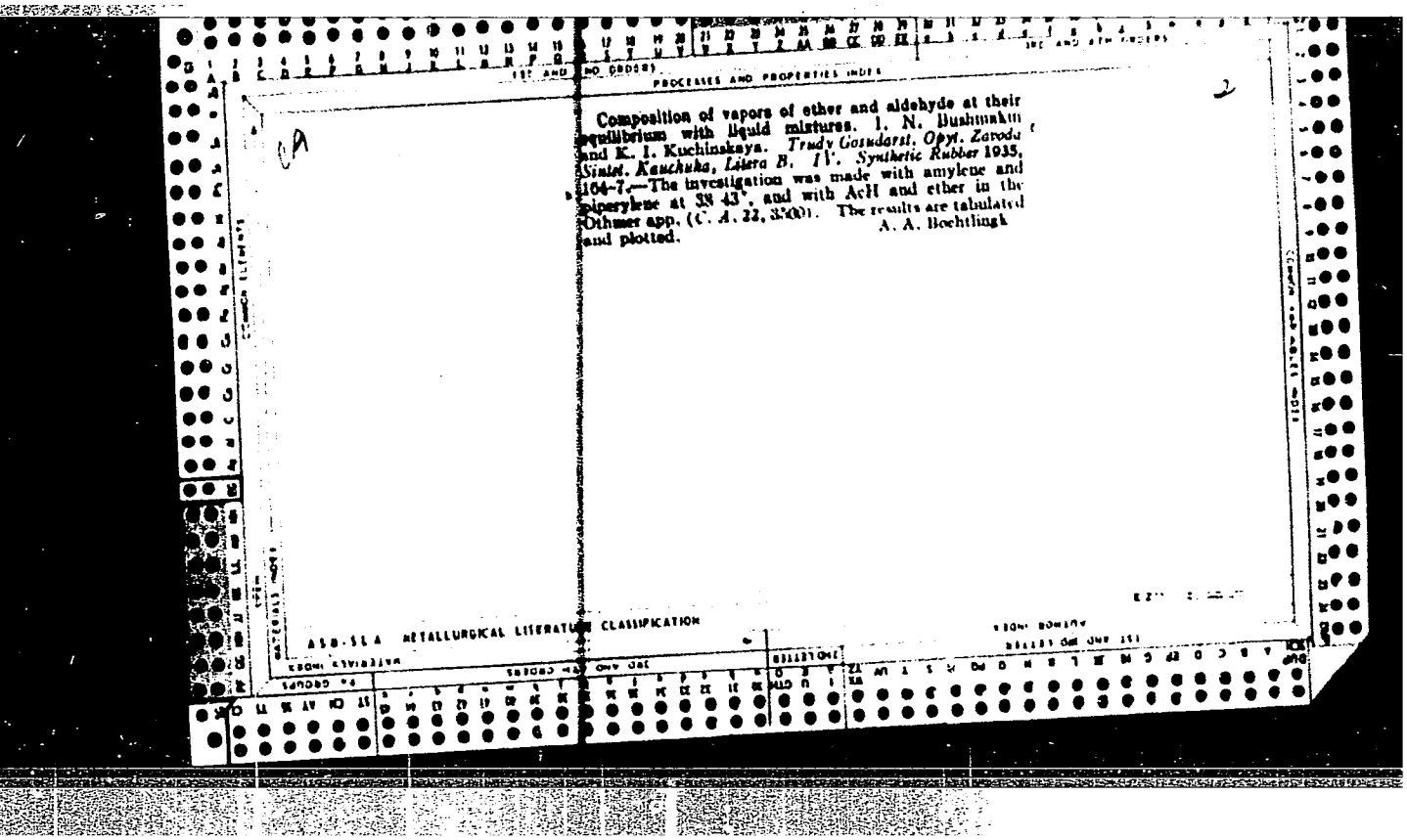
Contact oxidation of sulfur dioxide to sulfur trioxide under pressure. I. P. M. Luk'yanov, L. N. Bushmakin, M. V. Ruisakov and I. R. Molkentin. *J. Applied Chem.* (U. S. S. R.) 6, 772-84(1933).—SO_2 was oxidized to SO_3 in the presence of burned pyrite (contg. H_2O 15.68, Fe 56.16, S 3.08 and Cu 0.83%) of grain size 3-5 mm. The best temp. is about 650°; fluctuations in the concn. of SO_2 in the original gas contg. 6-8% of the former have no effect on the SO_3 yield. An increase of the air concn. in the original gas from 10% to 19-20% does not change the SO_3 yield. An increase in the pressure at a const. discharge rate of the gas increases the SO_3 yield. At a temp. of 650° and a velocity of 8001. gas/(l. catalyst × hrs.) an increase of the pressure from 25 to 100 atm. raises the yield from 76 to 95% of SO_3. With increase of velocity of passage of gas through the catalyst at a const. pressure the yield decreases, *e. g.*, at a pressure of 100 atm., a temp. of 650° and a volume velocity of 22.0, the yield is 95%, while at a volume velocity of 63 the yield is only 70%. The catalyst can be used for a very long period, but it is very sensitive to changes in the operating conditions and is fatigued after a comparatively short time. The main causes for the lowering of the catalyst's activity are (1) the presence of moisture in the gas blown through the catalyst, which should not be higher than the moisture left in the gas when passed through a washing bottle with concd. H_2SO_4, (2) the presence in the gas of more than 10% SO_3 and (3) a temporary lowering of the temp. during the operation of the catalyst. The catalyst is fatigued after 4 hrs., but the lost activity can be completely restored by blowing for 3-5 hrs. with dry air heated to 650°. The app. used is described and data are tabulated and plotted. A. A. Boehtlingk



BC

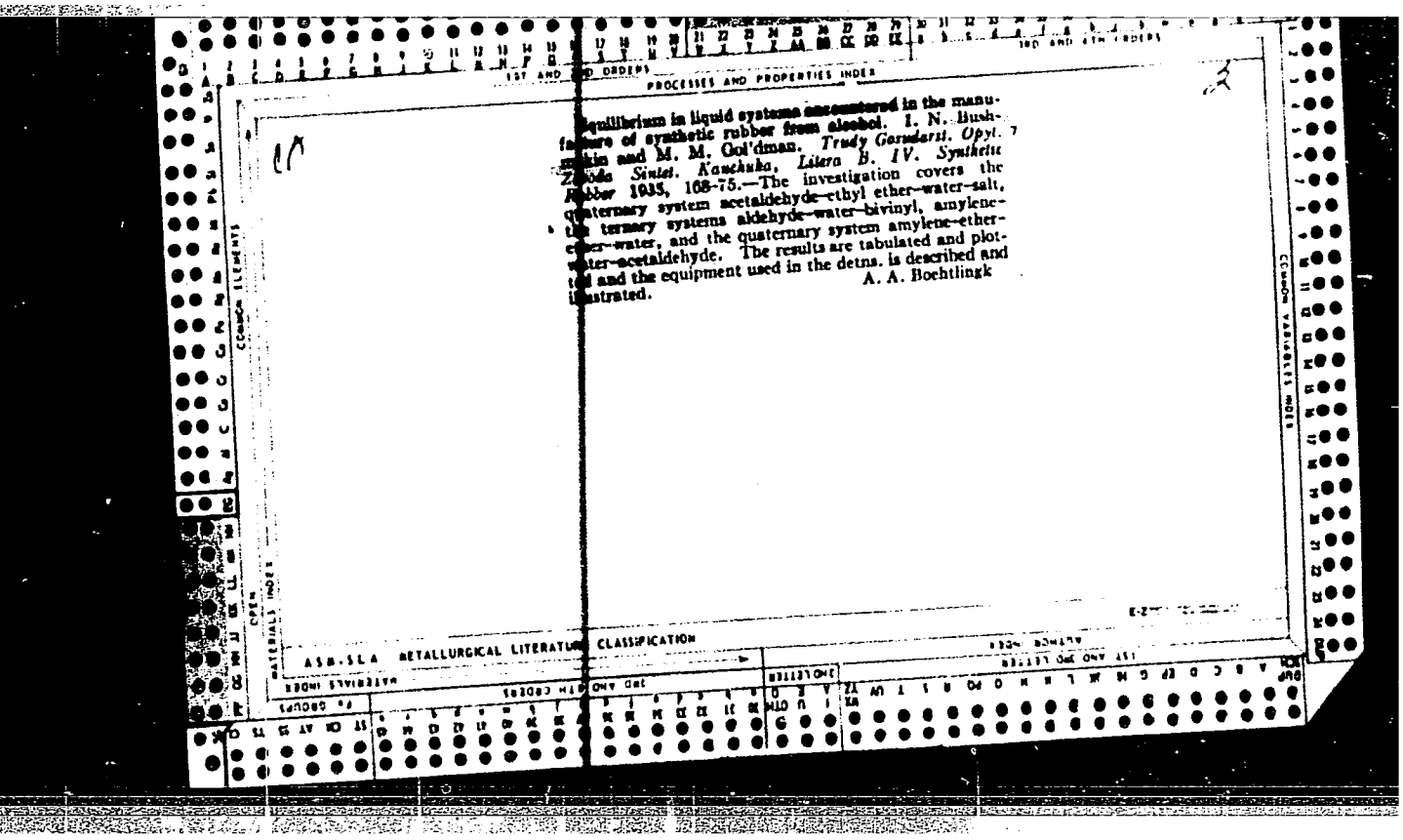
a-1

Physical-chemical properties of the chlorohydrin and of the dichlorides of Δ4-butene. I. N. Buschmakin, M. M. Goldman, and K. I. Kuptschina. Khaja (Sintet. Kautschuk, 1935, 4, No. 1, 33—35).— Equilibrium data are recorded for the binary and ternary systems formed with H_2O. Ch. Abs. (r)



Composition of vapors of ether and aldehyde at their equilibrium with liquid mixtures. I. N. Bushmakin and K. I. Kuchinskaya. *Trudy Gosudarst. Opyt. Zavoda Sintet. Kauchuka, Listra B. V. Synthetic Rubber* 1935, 104–7.—The investigation was made with amylene and piperylene at 38.43°, and with AcH and ether in the Othmer app. (*C. A.* 32, 3200). The results are tabulated and plotted.

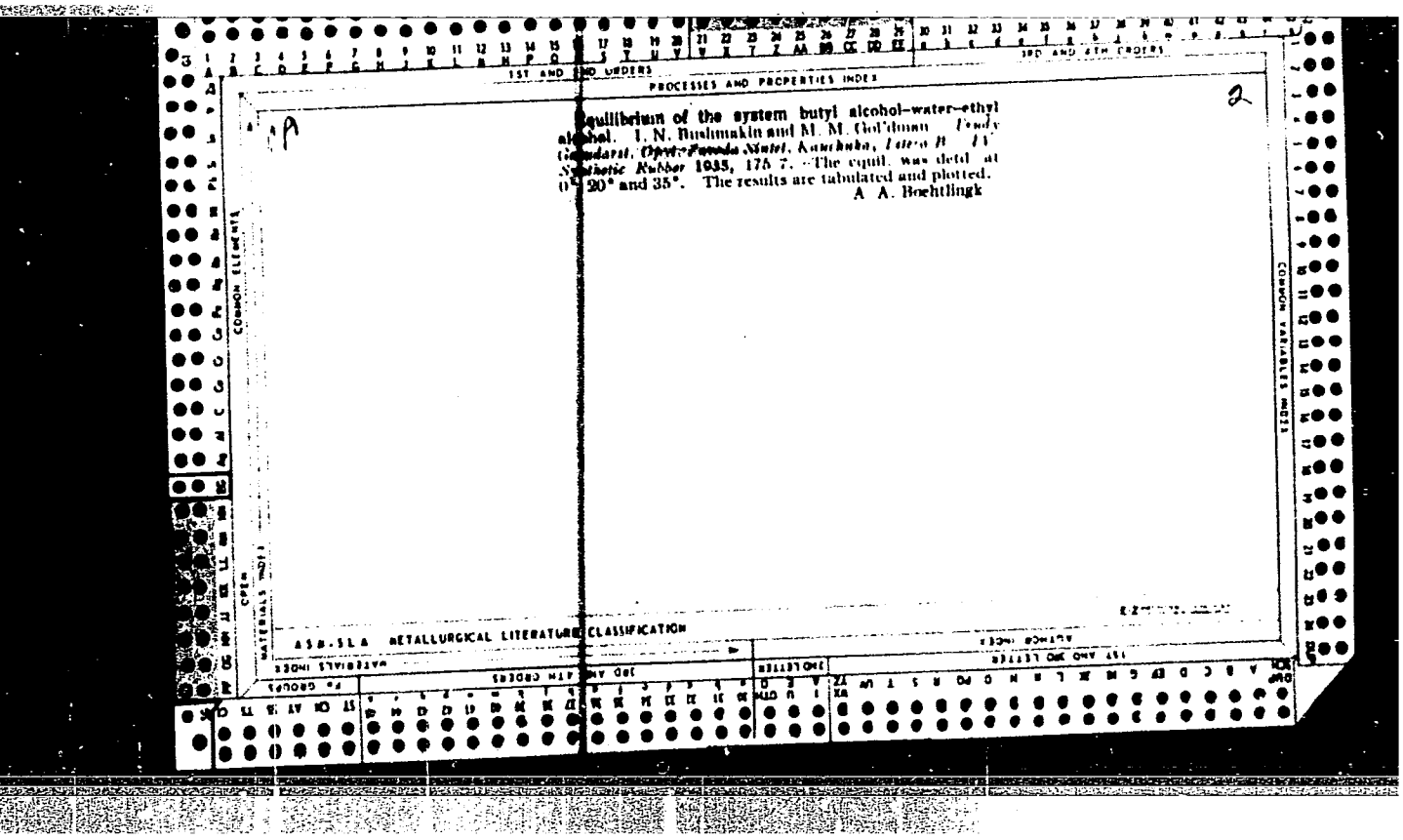
A. A. Boehtlingk



PROCESSES AND PROPERTIES INDEX

Equilibrium in liquid systems encountered in the manufacture of synthetic rubber from alcohol. I. N. Bushmakin and M. M. Gol'dman. *Trudy Gosudarst. Opyt. Zavoda Sintet. Kauchuka, Litera B. IV. Synthetic Rubber* 1935, 168-75.—The investigation covers the quaternary system acetaldehyde–ethyl ether–water–salt, the ternary systems aldehyde–water–bivinyl, amylene–ether–water, and the quaternary system amylene–ether–water–acetaldehyde. The results are tabulated and plotted and the equipment used in the detns. is described and illustrated.

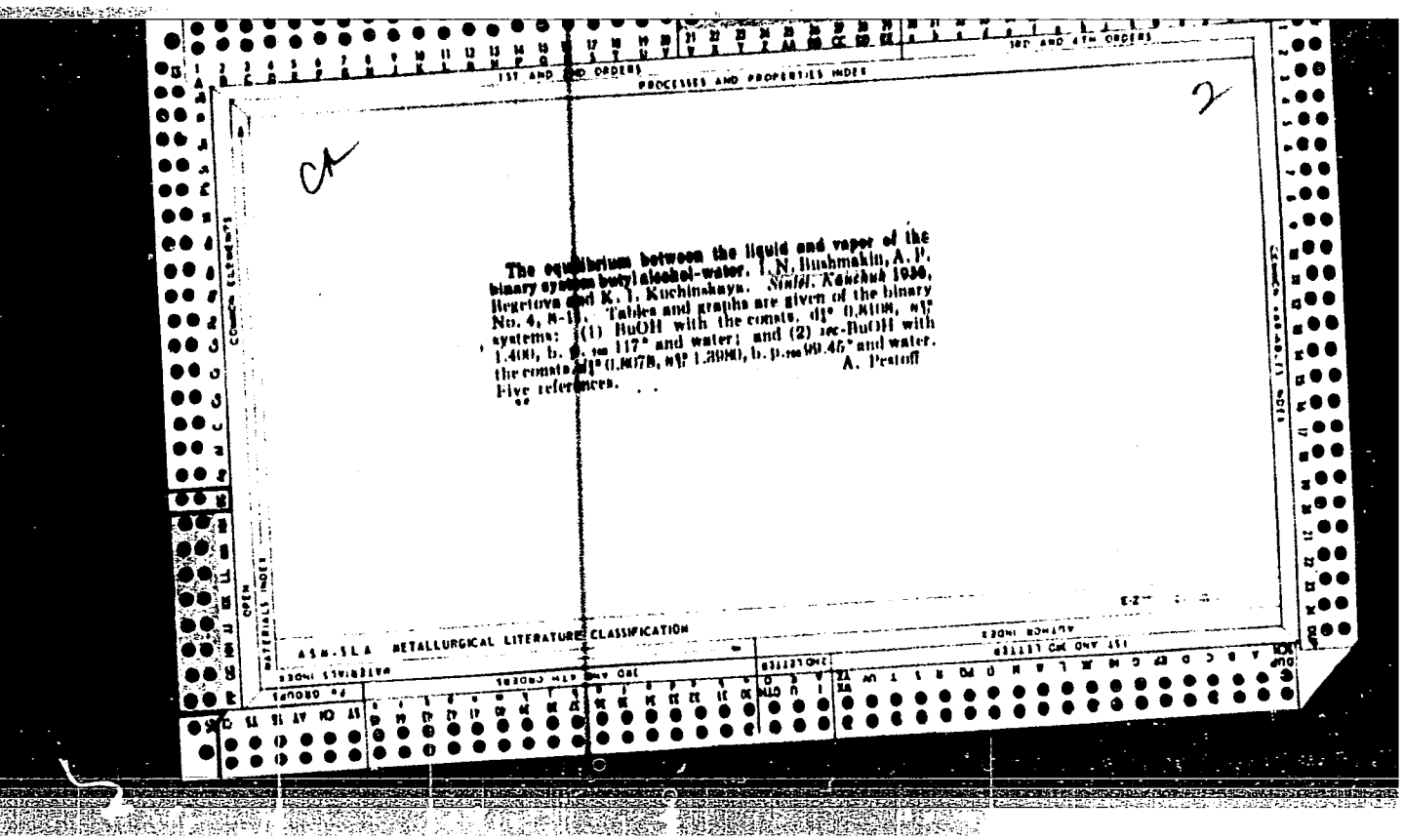
A. A. Boehtlingk

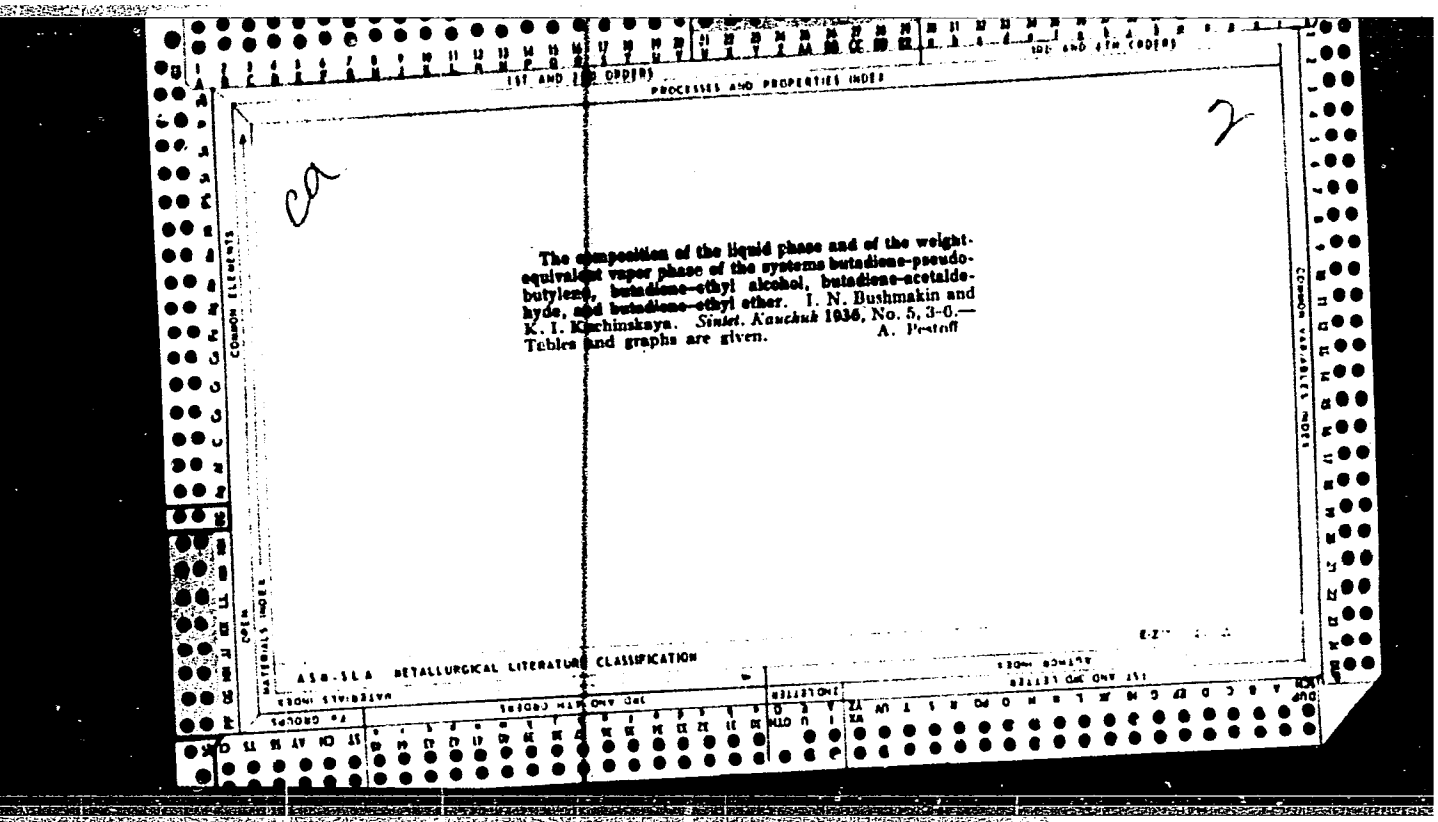


PROCESSES AND PROPERTIES INDEX

Equilibrium of the system butyl alcohol–water–ethyl alcohol. I. N. Bushmakin and M. M. Gol'dman. *Trudy Gosudarst. Opyt. Zavoda Sintet. Kauchuka, Issue B* 11 *Synthetic Rubber* **1935**, 175–7. The equil. was detd. at 0°, 20° and 35°. The results are tabulated and plotted.
A. A. Boehtlingk

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION





The composition of the liquid phase and of the weight-equivalent vapor phase of the systems butadiene-pseudo-butylene, butadiene-ethyl alcohol, butadiene-acetaldehyde, and butadiene-ethyl ether. I. N. Bushmakin and K. I. Kichinskaya. *Sintet. Kauchuk* 1936, No. 5, 3-6.— Tables and graphs are given. A. Pestoff

CA

Liquid-vapor equilibria in the system [illegible] **tetrachlorides. I.** I. N. Ilushnukin and E. D. Vorlkova. *Zhur. Obshchei Khim.* (J. Gen. Chem.) 19, 1615-20(1949). —The mixts. were analyzed by the d., for which purpose detns. of the d. at 20° were made over the whole range of compn., and a table of corrections for deviations from linearity was drawn up. Conjugate compns. of the liquid and the vapor, under the const. pressure of 700 mm. Hg, up to 96.4 mol. % CCl_4, were detd. with the aid of a modified distn. app. patterned after that of Kireev and Sitnikov (*C.A.* 36, 6404⁶). The data fit the equation $y/(100-y) = \alpha x/(100-x)$, where y and x are the mol. percentages of the volatile component (CCl_4) in the vapor and in the liquid, resp., α = the relative volatility, a linear function of x. From the exptl. data, $\alpha = 1.203 - 0.00203\,x$, this linear relation fits also the data of Rosanoff and Easley (*C.A.* 4, 7), available only up to 72 mol. % CCl_4. Conjugate values of x and y under 700 mm. Hg, smoothed out with the aid of the above equation for α, are (selected points): x = 5, 20, 30, 40, 50, 60, 70, 80, 90, 95, y = 5.91, 22.52, 32.86, 42.77, 52.40, 61.85, 71.23, 80.63, 90.18, 95.05. Boiling temps., detd. within ± 0.01°, under 760 ± 0.1 mm. Hg, are (selected points): y = 0.00, 4.55, 23.36, 47.83, 68.01, 78.10, 89.14, 93.58, 97.78, 100.0, b. 80.09, 79.76, 78.63, 77.56, 77.02, 76.83, 76.74, 76.72, 76.70, 76.69°. Existence of an azeotrope was investigated by ebulliometry of 89-100 mol. % CCl_4 solns. under 760, 620, 500, 280, 195, 150, and 100 mm. Hg. An azeotrope appears only below 280 mm. Hg (below 47°); under 100 mm., its compn. is ~ 97.6 mol. % CCl_4, b. ~ 21.93°. Extension of the liquid/vapor equil. detns. to over 90 mol. % CCl_4, i.e. to the region where the usual distn. method fails because of the closeness of the compns. of the liquid and the vapor, was successful with distn. over a column of n plates, in a closed system; in this case, $y'/(100-y') = \alpha^n x'/(100-x')$, permitting calcn. of a mean α corresponding to $x = (y' + x')/2$. This gives the conjugate values x = 92.92, 95.27, 98.07, 99.41, 99.44, y = 93.01, 95.31, 98.08, 99.41, 99.44. The method is applicable to cases where α is close to unity, or the method of analysis not accurate enough for the small difference of compn.

N. Thon

BUSH MANKIN, L.N.

USSR

Diagrams for determining the effectiveness of fractionating columns with the use of benzene-carbon tetrachloride. L. N. Bushmakin (Leningrad State Univ.). *Zhur. Obshchei Khim.* 21, 1107–12(1951); cf. *C.A.* 44, 02528.— A method for calcg. the effectiveness, i.e., the no. of theoretical plates, for a fractionating column with changing values of the volatility of the system, was applied to the system C_6H_6–CCl_4 for the concn. range 3–99 mole % CCl_4. A diagram of concn. vs. no. of plates was constructed. Comparison of the calcd. with expt. results showed that the column efficiency can be detd. in this way up to 500 stages.

J. Rovtar Leach

USSR/Chemistry - Production Equipment Mar 52

"The Dependence of the Effectiveness of Filled Rectification Columns on the Height of the Filler, and the Reproducibility of the Effectiveness," I.N. Bushmakin, R. V. Lyzlova, O. I. Avedeyeva, Leningrad Order of Lenin State U

"Zhur Prik Khim" Vol XXV, No 3, pp 287-302

Investigations were conducted with coarse and fine fillers at different heights of filling under preliminary wetting to a varying deg by spraying with a jet of reflux (I). The same investigations were carried out under preliminary flooding of the

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USSR/Chemistry - Production Equipment (Contd) Mar 52

column (II). In I, deg of wetting does not influence effectiveness with coarse filling; increases effectiveness (as well as reproducibility) with fine filling. In II, coarse filling yields the same results as in I; fine filling results in differences depending on temp.

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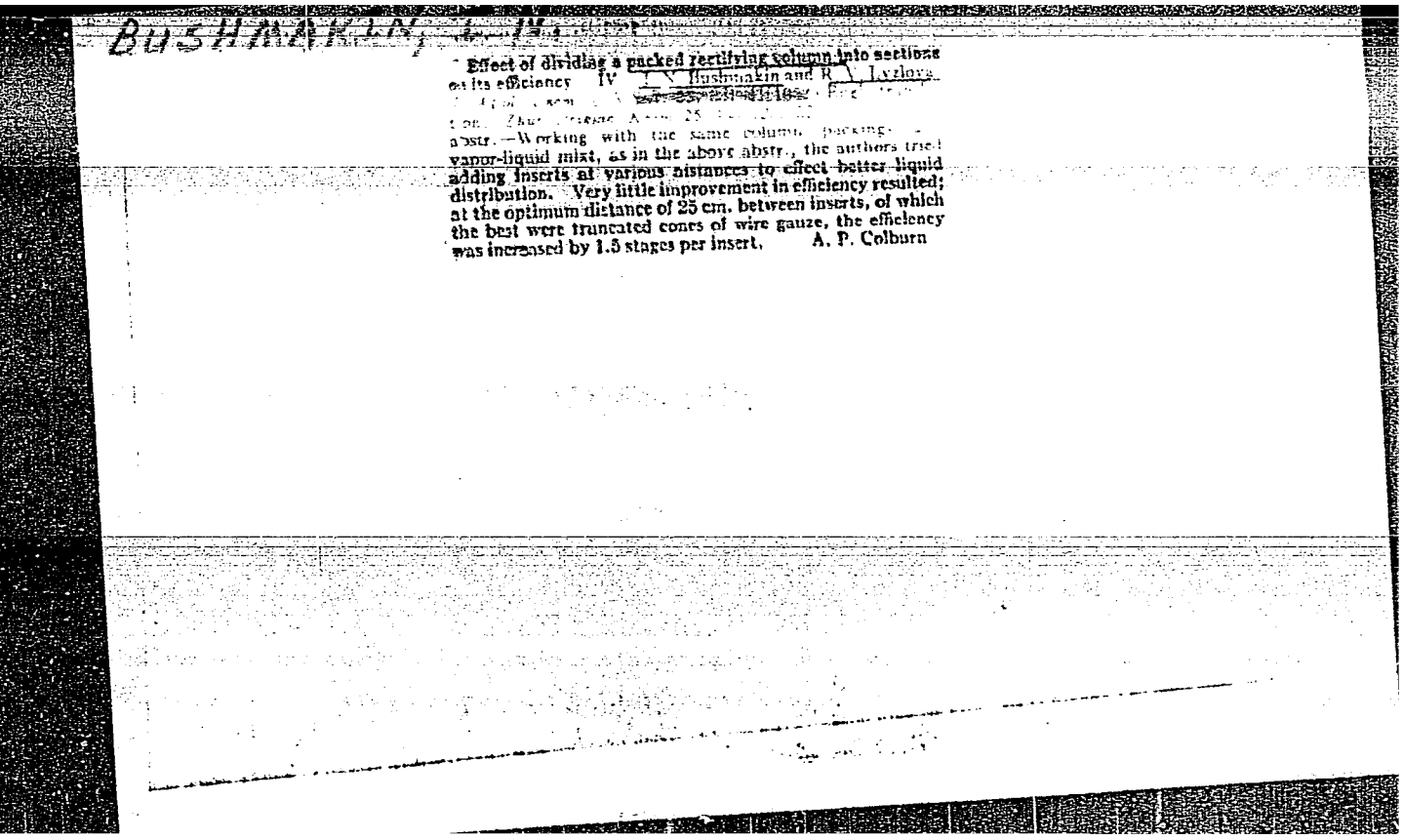
BUSHMAKIN, I. N.



BUSHMAKIN, I. V.

Effect of dividing a packed rectifying column into sections on its efficiency. IV. I. V. Bushmakin and R. A. Taylorova. Zhur. Prikl. Khim. 25, [illegible]. abstr.—Working with the same column packing vapor-liquid mixt. as in the above abstr., the authors tried adding inserts at various distances to effect better liquid distribution. Very little improvement in efficiency resulted; at the optimum distance of 25 cm. between inserts, of which the best were truncated cones of wire gauze, the efficiency was increased by 1.5 stages per insert. A. P. Colburn

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307720003-9"

BUSHMAKIN, I.N.

Determination of liquid-vapor equilibria with a rectification column. V. I. N. Bushmakin, K. V. Lyzlova, and P. Ya. Molodenko (A. A. Zhdanov State Univ., Leningrad). *Zhur. Prikład. Khim.* 26, 1258-67(1953); cf. C.A. 44, 1317e.—Examples are given to clarify the use of the rectification-column method for the detn. of the liquid-vapor equilibria of binary systems. The difficulties of the method are considerable: at least 2 columns are needed, the materials must be of the highest purity, and the procedure is very laborious. Use of the method is justifiable only in the range at which α approaches unity and where $\alpha = f(x)$ has a sharp inflection, or to check data obtained by the simple method of direct distn. The theoretical no. of plates n is first calcd. by the equation previously given (*loc. cit.*); the preliminary values of α needed for these calcns. are obtained from an $\alpha = f(x)$ curve detd. by direct distn. The max. n is a function of the concn. and should be calcd. for at least one point in the range of 0-10% and 2 points in the range of 90-100% of x. Experimentally this value of n is approached, in 2 loosely packed columns, increasing the packing height gradually by adding pieces of glass tubing through the reflux condenser. The smallest allowable n should be used. Data obtained by this method on the system CCl_4-$C_2H_4Cl_2$ are compared with those of Bragg, *et al.* (*C.A.* 36, 6378^1). I. Bencowitz

BUSHMAKIN, I. N.

5

Liquid-vapor equilibria in the systems methyl alcohol–acetone and heptane–benzene. VI. I. N. Bushmakin, P. Ya. Molodenko, and R. V. Lyzlova (A. A. Zhdanov State Univ., Leningrad). *Zhur. Prikład. Khim.* 26, 1265–75 (1953); cf. preceding abstr.—The liquid-vapor phase equilibria of the binaries MeOH–Me_2CO and heptane–C_6H_6 were detd. at 760 mm. Hg by means of the rectification-column method; the first system was chosen to investigate Othmer's suggestion (cf. *C.A.* 22, 3660) of the possibility of a 2nd azeotropic point in the system. All materials were carefully purified and the concns. detd. by the refractive index. The azeotropic point in the MeOH–Me_2CO binary was located at 77.4 mol. % Me_2CO in the liquid phase; it was approached from the 77 and 78% liquid phase with a column of n = 10. The curve n *vs.* concn. was obtained to check the correctness of the $\alpha = f(x)$ curve; the constancy of n for 2 concns. before and after the azeotropic point was taken as proof that there was no 2nd azeotropic point in this system. The $\alpha = f(x)$ curve of the system heptane–C_6H_6 was obtained by direct distn. Only the point 99.31% C_6H_6 was detd. in a rectification column. In the range of 0–00% C_6H_6 α was accurate to within ± 0.01, which results in an error of less than 1 plate; in the interval of 98–100% the accuracy was to within ± 0.005.

I. Bencowitz

VISHMANN, L. M.

Calculations of rectification processes of binary mixtures in packed columns by means of the theoretical plate-concentration diagram. L. M. Vishmann and R. V. Lavlova (State Univ., Leningrad). *Zhur. Fiz. Khim.* 27, 1553-10 (1953).—The dependence of column efficiency K is defined as $K = n'/n$ where n' and n are the nos. of theoretical plates for a reflux ratio R and K_∞, resp. It is shown that for columns with an open packing (n for a liquor rate of 2 ml./min. sq. cm., 15 and 11) the exptl. data of 5 binary systems fall upon a smooth curve of K vs. R, with very little scattering for R from 3 to 15. Thus for any binary, not subject to the Marangoni effect (ref. *C.A.* 45, 6455*f*), for which n is known at far the same liquor rate can be calcd. This rule does not hold for columns with close packing (n 57 and 33). The following systems with the corresponding liquor rates were tested: C_6H_6-CCl_4, 1.4; dichloroethane, 2.4; heptane-C_6H_6, 2.0; MeOH-Me_2CO, 2.0; AcOH-H_2O, 7.7. A further simplification is suggested by preliminary expts.: the difference of K for the same liquor rate at R_∞ of 2 systems, one of which may be taken as a standard, is independent of the packing and is a function of K_∞ only.

I. Bencowitz

RUBINAN, I. Y.

RUBINAN, I. Y.- "Methods of Obtaining Precise and Complete Data on Liquid-Vapor Equilibria and the Results of Investigating Certain Basic Processes of Rectification Using These Data." Leningrad Order of Lenin State U imeni A. A. Zhdanov. Leningrad, 1955. (Dissertation for the Degree of Doctor of Chemical Sciences)

So; Knizhnaya Letopis', No 3, 1956

Name: BUSHMAKIN, Igor' Nikolayevich

Dissertation: Methods of deriving precise and complete data on the liquid-vapor equilibrium, and the results of investigations, based on these data, of certain basic questions of rectification

Degree: Doc Chem Sci

Affiliation: /Not indicated/

Defense Date, Place: 20 Feb 56

Certification Date: 9 Mar 57

Source: BMVO 13/57

BUSHMAKIN, I. N.

USSR/Processes and Equipment for Chemical Industries K-1
Processes and Apparatus for Chemical Technology

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 14174

Author : Bushmakin I.N., Lutugina N.V.
Title : Dependence of Efficiency of a Column with Poured Packing Upon the Pressure

Orig Pub : Zh. prikl. khimii, 1956, 29, No 8, 1164-1169

Abstract : Investigation of the effect of pressure on the efficacy of a rectification column 1.6 cm in diameter, filled with a layer of packing 140 cm in height. The experiments were conducted at a pressure of 760 and 100 mm Hg, with the C_6H_6-CCl_4 system, for which data were obtained concerning the liquid-vapor equilibrium at a pressure of 100 mm Hg. The experimental data show that on change in pressure, within the above-stated range, efficiency of the column remains practically unchanged. It is noted that on using a small size packing a lowering of efficacy

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USSR/Processes and Equipment for Chemical Industries
Processes and Apparatus for Chemical Technology K-1

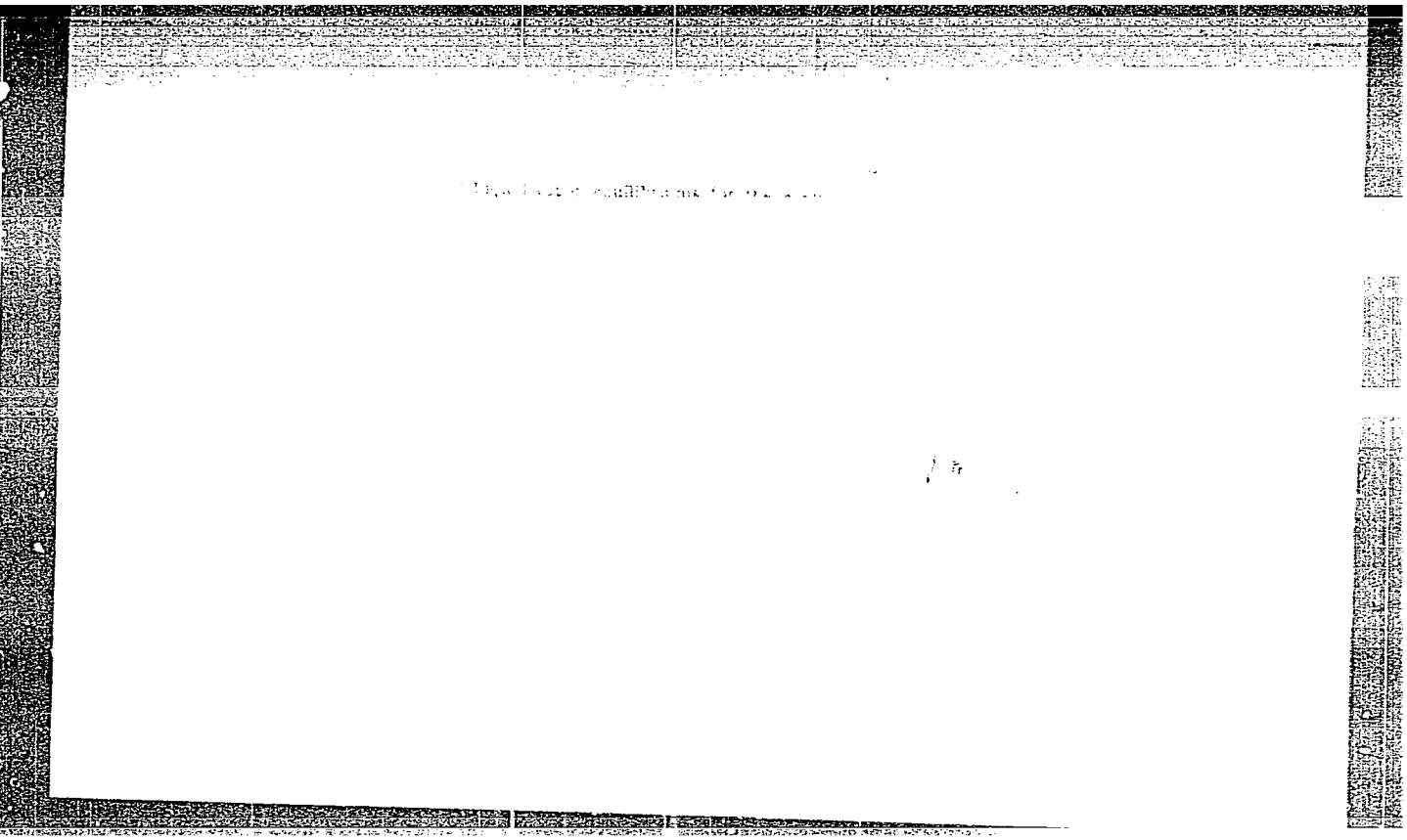
Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 14174

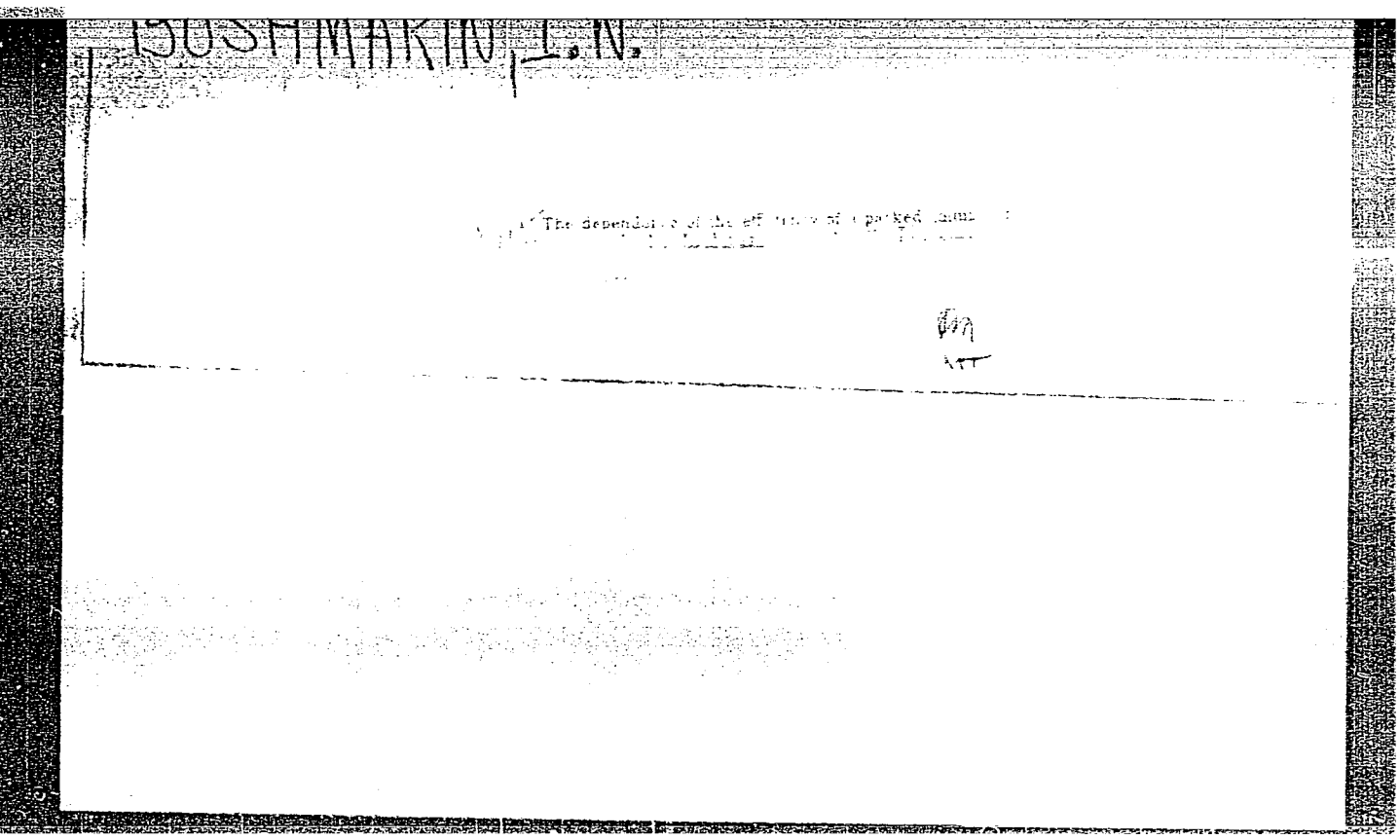
due to less adequate preliminary wetting of the packing.

Preceding communication see RZhKhim, 1956, 12358.

Leningrad Order of Lenin
State Univ.

Card 2/2





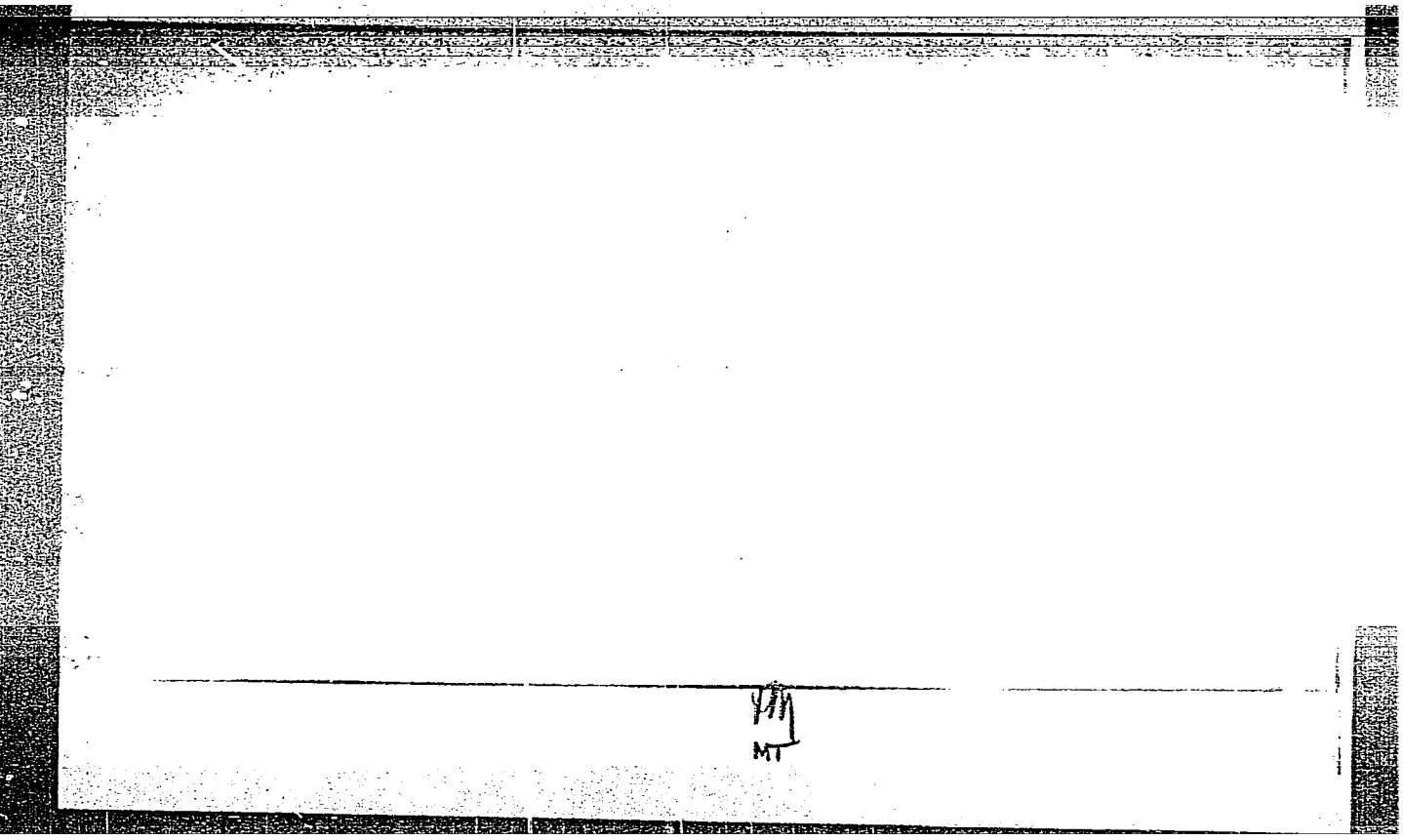
Distr: 4E4j/4E3d

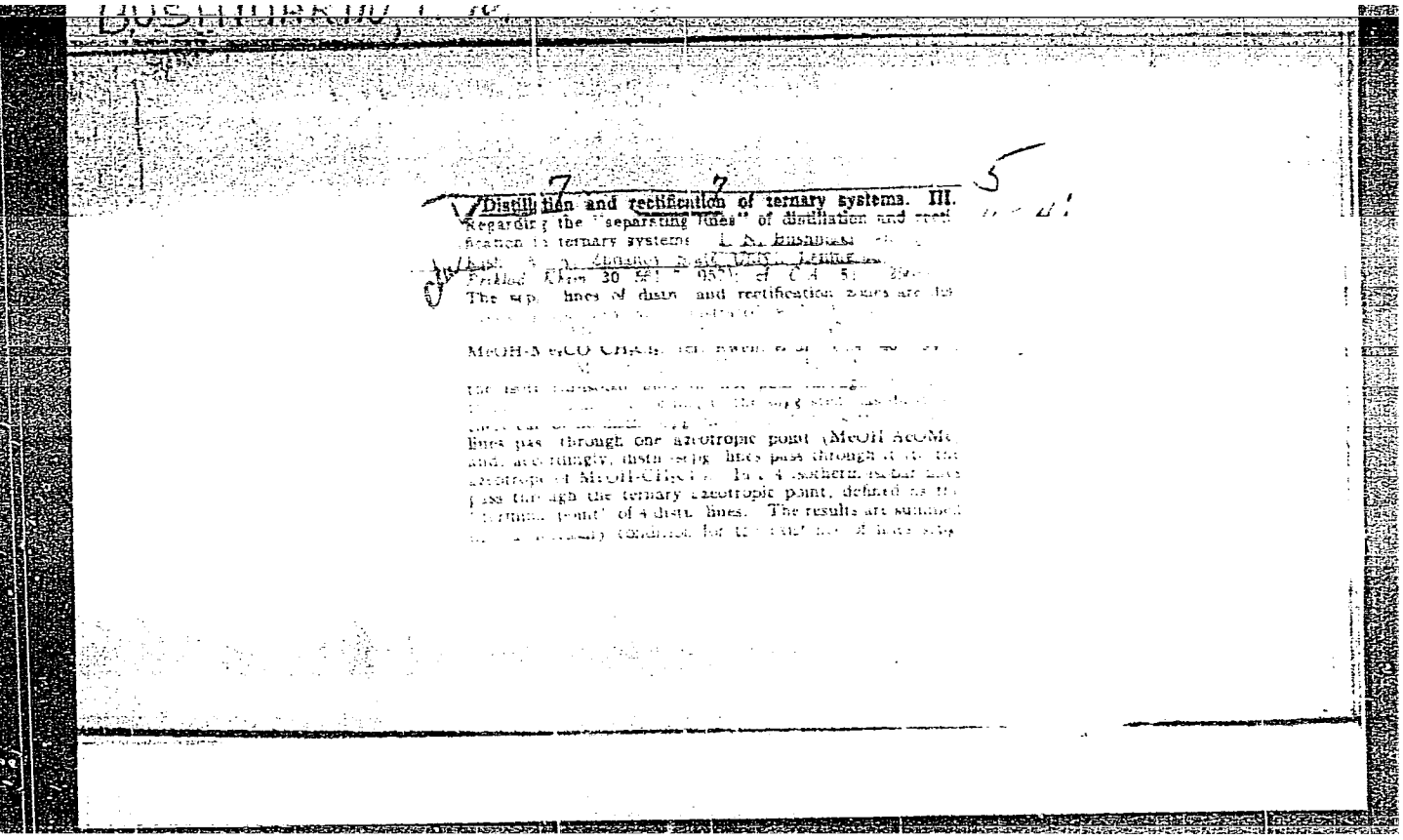
The choice of a fractionating component (entraining agent) for azeotropic rectification. P. Ya. Molodenko and I. N. Bushmakin. *Vestnik Leningrad. Univ.* 12, No. 10, *Ser. Fiz. i Khim.* No. 2, 68-92(1957).--Ternary distn. diagrams for acetone-MeOH-CH_2Cl_2, $CHCl_3$-acetone-CS_2, toluene-paraffin-MeOH, $CHCl_3$-MeOAc-MeOH, acetone-$CHCl_3$-MeOH, $CHCl_3$-acetone-isopropyl ether, and H_2O-HCOOH-1,2-dichloroethane (I) are given (with tables of the last) as an aid in the choice of an entraining agent for the 5 main types of azeotropes. The entraining agent in each case was added so as to sep. 2 difficultly separable compds.; thus I added to H_2O-HCOOH gave an 80% yield of HCOOH. The theory of ternary systems is discussed. M. A.

Bushmakin, I.V.

Distillation and rectification of ternary systems. I. Isobaric liquid-vapor equilibrium in ternary systems with saddle-point azeotropic typ[illegible]

Prikład. Khim., 30, 206-11(1957); cf. *C.A.* 44, 1317*e*.—The ternary system AcOMe – $CHCl_3$ – MeOH was chosen for this study because preliminary expts. showed that it possessed a triple azeotrope of the saddle-point type (cf. Bwell and Welch, *C.A.* 40, 704[illegible]). The compn. of the phases were detd. by the *n* and by the dielec. const. The data were tabulated, plotted, and analyzed thermodynamically. The results with the binary system MeOH – $CHCl_3$ (I) agreed closely with those of Lang (*C.A.* 45, 10025*h*) and those of the binary system MeOH – AcOMe (II) were practically identical with the data of Crawford, *et al.* (*C.A.* 43, 8835*a*). In the binary system $CHCl_3$ – AcOMe (III) the azeotrope b.p. 64.74°, contained 35.65% AcOMe. The isobar-isotherms of the vapor and liquid phase-diagrams consisted of 4 families of curves forming a ridge from the azeotrope of III to the MeOH apex at 64.67° and a valley between the azeotrope of II and of I, 63.76° with 65.0% AcOMe and 63.86° with 55.25% $CHCl_3$, resp. The intersection of the ridge with the valley formed a saddle-point azeotrope, b.p. 60.45°, contg. AcOMe 25, $CHCl_3$ 29.2, and MeOH 45.8 mol %. The distn. lines formed 4 families of curves, 2 of which started from azeotrope of II and the other 2 from the azeotrope of I, one of each group terminated in the apex of MeOH and the other at the azeotrope of III. The lines sepg. these families of distn. curves approximated the projections of the ridge and the valley on the b. temp. surface. The results supported the first law of Konovalov: the vapor phase is richer in that component the isobaric evapn. of which raises the b.p. of the soln. I. B.



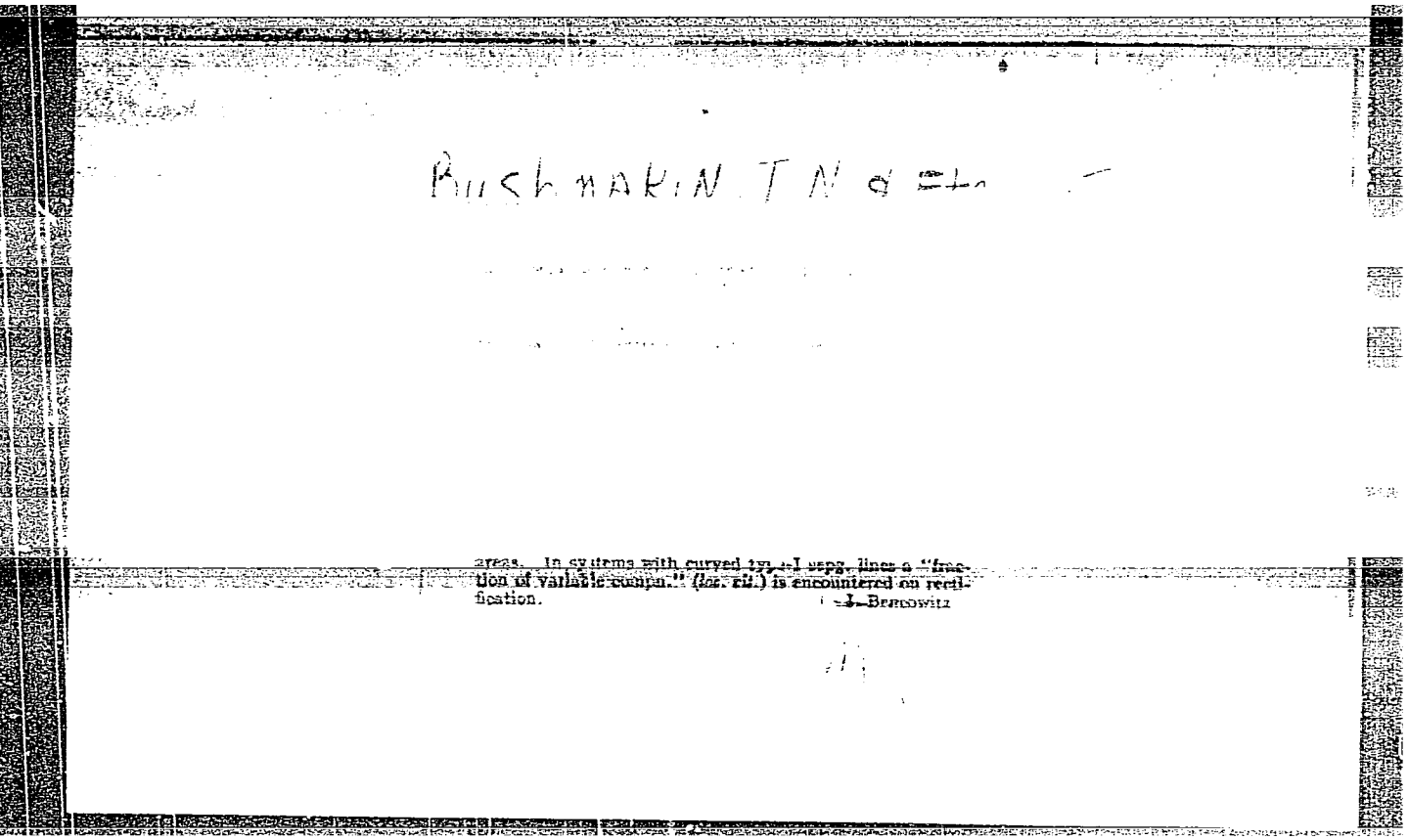


Distillation and rectification of ternary systems. III.
Regarding the "separating lines" of distillation and rectification in ternary systems.

The sep. lines of distn. and rectification curves are lin

MeOH-AcOEt-CHCl3.

lines pass through one azeotropic point (MeOH-AcOMe
and, accordingly, distn. sep. lines pass through one
azeotrope of MeOH-CHCl3. In 4 systems, the sep. lines
pass through the ternary azeotropic point, defined as the
"terminus point" of 4 distn. lines. The results are summarized



areas. In systems with curved typ[illegible] lines a "fine-
tion of variable compa." (loc. cit.) is encountered on recti-
fication.

—J. Bernowitz

AUTHORS: Bushmakin, I.N., Lutugina, N.V. 54-10-2-7/16

TITLE: The Equilibrium Liquid-Liquid and Liquid-Vapor in the System Water-Acetic Acid-n-Butylacetate (Ravnovesiya zhidkost'-zhidkost' i zhidkost'-par v sisteme voda-uksusnaya kislota-n-butilatsetat)

PERIODICAL: Vestnik Leningradskogo Universiteta, Seriya fiziki i khimii, 1958, Vol. 10 Nr 2, pp. 75-83 (USSR)

ABSTRACT: Among the methods of dehydrating diluted solutions of acetic acid which are obtained by the separation of wood distillation products, the method of azeotropic rectification has recently been steadily gaining ground. In the present paper the authors deal with the results of the investigation of the equilibrium liquid-liquid in the ternary system as well as the distribution of distillation lines and vapor lines on the triangle of the compositions isothermal lines - isobars. For the purpose of explaining the behavior of the systems in the case of open evaporation and rectification, in which components cannot be completely mixed, data concerning the equilibrium liquid-liquid at boiling temperature of the solution separated into layers are necessary. The results obtained by these experiments are given (table 1). At the same time the authors

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determined the position of the binodal points on the triangle of the composition at 18° (room temperature) with accuracy. The latter data facilitate determination of gross compositions of heterogeneous liquids, which are necessary for the investigation of distillation lines. The boiling temperatures of the binary solutions n-butylacetate-acetic acid are shown (table 2). The boiling temperatures of the heteroazetrope obtained by checking the data given by Khennot (Ref 13) amount to 91.04°C - according to Khennot - 90.2°C. The boiling temperatures of the ternary system were investigated according to 4 secants in Gibbs' triangle, which correspond to the 4 series of solutions with constant correlations of molar parts of water and n-butylacetate (e.g. 0,4; 1,1; 5,3; 11,5). According to these data as well as to those of binary systems the isotherms-isobars (fig. 2) were obtained. With a changing solution by evaporation also the vapor, which is in equilibrium with it, changes according to the line of the vapor. As starting point for the distillation- and vapor lines the heteroazeotrope water-n-butylacetate was used. The course taken by 5 lines of open evaporation and the corresponding vapor lines were investigated. Results are graphically represented (fig. 4). It is seen

that all lines of open evaporation begin in the immediate vicinity of the heteroazeotrope "water-n-butylacetate", that they rise up to the point "acetic acid", after which, without reaching this destination, they turn off in the direction "acetic acid-n-butylacetate. It is known from the thermodynamic theory that the distillation lines continue farther along the side "acetic acid-butylacetate (approaching it asymptotically) and must end at the point "butylacetate". The course taken by the distillation lines along the side of the triangle which corresponds to the binary system acetic acid-n-butylacetate can, however, not be determined experimentally as they approach too close to the latter. There are 4 figures, 2 tables, and 17 references, 6 of which are Soviet.

SUBMITTED: December 25, 1957

AVAILABLE: Library of Congress

Card 3/3

1. Acetic acid-n-butylacetate-water systems—Equilibrium
2. Acetic acid-n-butylacetate-water systems—Thermodynamic properties

BUSHMAKIN, I.N.; LUTUGINA, N.V.

Liquid-liquid and liquid-vapor equilibrium in the water - acetic acid - n-butylacetate system [with summary in English]. Vest. LGU 13 no.10:75-83 '58. (MIRA 11:6)
(Acetic acid)
(Phase rule and equilibrium)

5(1) SOV/80-32-4-18/47

AUTHOR: Bushmakin, I.N.

TITLE: A Device for Determining the Liquid-Vapor Equilibria (Pribor dlya opredeleniya ravnovesiy zhidkost'-par); Communication IX (Soobshcheniye IX)

PERIODICAL: Zhurnal prikladnoy khimii, 1959, Vol 32, Nr 4, pp 812-817 (USSR)

ABSTRACT: The author studied rectification processes for which most accurate data on equilibria in liquid-vapor systems were needed. He tried to use some typical devices for single-stage evaporation and the Scatchard device [Ref. 1] but all of them did not meet the requirements. Therefore the author designed two new devices for determination of liquid-vapor equilibrium. The first of them, although better than the existing heretofore devices, called for a considerable number of experiments for exact determinations. This was due to necessity of try-and-error finding of optimum conditions for experiments to obtain correct results. This deficiency was eliminated in the second device, illustrated by Figure 2, which has a distinguishing property in that the

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equilibrium temperature in its vapor jacket is easily controlled. The device itself and the method of operating it are described in detail. It yields accurate results even when the degree of heating vapor jacket and boiling rate are varied in a wide range. No errors due to device failures have been observed; errors caused by false determinations of the liquid composition sometimes occur, but they are reduced to a minimum by repeated analyses of samples of the same experiment.
There are 2 diagrams and 7 references, 4 of which are Soviet, 1 American, 1 English and 1 German.

ASSOCIATION: Leningradskiy gosudarstvennyy ordena Lenina universitet (Leningrad State University, bearer of the Lenin Order)

SUBMITTED: February 17, 1958.

FROST, Andrey Vladimirovich, prof. [deceased]. Prinimali uchastiye: BUSHMAKIN, I.N.; VVEDENSKIY, A.A.; GRYAZNOV, V.M.; DEMENT'YEVA, M.I.: DINTSES, A.I.; DOBRONRAVOV, R.K.; ZHARKOVA, V.R.; ZHERKO, A.V.; IPAT'YEV, V.N.; KVYATKOVSKIY, D.A.; KOROBOV, V.V.; MOOR, V.G.; NEMTSOV, M.S.; RAKOVSKIY, A.V.; REMIZ, Ye.K.; RUDKOVSKIY, D.M.; RYSAKOV, M.V.; SEREBRYAKOVA, Ye.K.; STEPUKHOVICH, A.D.; STRIGALEVA, N.V.; TATEVSKIY, V.M.; TILICHEYEV, M.D.; TRIFEL', A.G.: FROST, O.I.; SHILYAYEVA, L.V.; SHCHEKIN, V.V.. DOLGOPOLOV, N.N., sostavitel'; GERASIMOV, Ya.I., otv.red.; SMIRNOVA, I.V., red.; TOPCHIYEVA, K.V.; YASTREBOV, V.V., red.; KONDRASHKOVA, S.F., red. izd-va; LAZAREVA, L.V., tekhn.red.

[Selected scientific works] Izbrannye nauchnye trudy. Moskva, Izd-vo Mosk.univ., 1960. 512 p. (MIRA 13:5)

1. Chlen-korrespondent AN SSSR (for Gerasimov).
(Chemistry, Physical and theoretical)

5.1160

77513
SOV/80-33-1-22/49

AUTHOR: Bushmakin, I. N.

TITLE: The Relationship Between the Efficiency of the Rectifying Column and the Reflux Ratio. Communication XIV

PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol 33, Nr 1, pp 127-134 (USSR)

ABSTRACT: The authors reported previously (this journal, 1954, Vol 27, p 1006) on a batch distillation calculation method which used a diagram showing the relationship between the concentration and the number of theoretical plates. This method required, however, that the efficiency of the column at a given reflux ratio be determined experimentally for each particular case. The present study attempts to establish a relationship of the efficiency (number of theoretical plates) as function of the reflux ratio R. The behavior of various binary mixtures was investigated in five different rectifying columns, and the composition of

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the liquids was determined refractometrically. For comparison of the results obtained in various columns, the authors introduce a coefficient K which expresses the decrease of efficiency on withdrawal of the distillate: $K = n_R/n_\infty$, where n_R is the efficiency at a given reflux ratio, and n_∞ is the efficiency at total reflux, both determined at the same rate of reflux return (in ml/min). The value of K depended on the reflux ratio R and decreases with decreasing R. It was found that for a given binary mixture the K = f(R) curve does not depend on the rate of reflux return nor on the height and type of packing; i.e., it is independent of the efficiency and the contact time in the column. Plots of K against R of various binary mixtures closely resembled each other; it was possible, therefore, to draw a mean standard curve K = f(R) valid for all binary mixtures. This curve serves to predict the efficiency

The Relationship Between the Efficiency of the Rectifying Column and the Reflux Ratio. Communication XII

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(n_R) on withdrawal of the distillate at a given reflux ratio by finding the value of K corresponding to the given reflux ratio R and multiplying it by the efficiency at full reflux (a_∞). Data for the construction of this standard curve are given in the enclosed table. The authors showed previously (this journal, 1959, Vol 32, Nr 12, p 2368) that the efficiency of a column at full reflux does not depend on the amount of the liquid remaining in the still. It was established in the present study that this is also valid for columns working with withdrawal of the distillate. The author expresses his appreciation to T. S. Tolstova, A. V. Ivanov, O. F. Kovalichev, T. M. Khotuntseva, and A. G. Il'ev for assistance in the experiments. There is 1 table; 1 figure; and 15 references, 2 U.S., 13 Soviet. The U.S. references are: R. H. Baker, C. Barkenbus, C. A. Roswell, Ind. Eng. Ch., Anal. Ed., 12, 468 (1940); F. C. Collins, V. Lantz, ibid., 18, 673 (1946).

ASSOCIATION: Leningrad State University (Leningradskiy gosudarstvennyy universitet)

SUBMITTED: July 16, 1959

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The Relationship Between the Efficiency of the Rectifying Column and the Reflux Ratio. Communication XIV

[illegible]-53-1-22/49

Table 4. Data for constructing the [illegible] curve K = f(R).

R	K	R	K
2.5	0.15	30	0.83
5.0	0.28	40	0.88
7.5	0.39	50	0.92
10.0	0.48	60	0.94
12.5	0.56	70	0.95
15.0	0.63	80	0.96
17.5	0.68	90	0.97
20.0	0.73	100	0.98

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5.1160

77632
SOV/80-33-2-7/52

AUTHOR: Bushmakin, I. N.

TITLE: Calculation of Binary System Rectification by Means of a Diagram of the Number of Stages Versus Concentration. Communication XV

PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol 33, Nr 2, pp 296-304 (USSR)

ABSTRACT: A graphic method for the determination of some of the parameters of batch distillation in packed columns was devised by the authors. Preliminary study was published in 1954 (this journal, 1954, Col 27, p 1006). The following parameter notations were introduced: x_1' - molar fraction of the more volatile component in the initial solution; w_1 - number of moles of the initial solution; x_k' - molar fraction of the more volatile component after rectification; w_k - number of moles remaining in the column (still pot + column

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holdup); y' - molar fraction of the more volatile compound in the condenser liquid (in the removed distillate); $\bar{y}'$ - molar fraction of the volatile component in the total of the removed distillate; D - number of moles of the removed distillate; R - reflux ratio; n_∞ - column efficiency (number of stages) at total reflux; n_R - column efficiency at the given reflux ratio; $n_R^\bullet$ - column efficiency at the given reflux ratio taking into account the column holdup; K - coefficient of the efficiency reduction ($K = \frac{n_R}{n_\infty}$);

$$\beta = \frac{\text{column efficiency for the given system}}{\text{column efficiency for the standard system}}$$

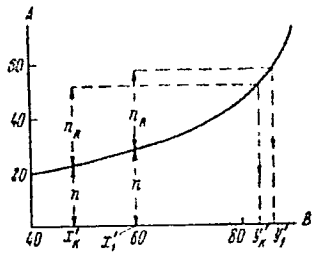
(the standard system is here benzene-carbon tetrachloride). Plots of n_∞ against the amount of reflux (in ml/min) and plots of $K = f(R)$ allow the determination of w_k and n_R at given values of x_1', w_1, x_k', amount

of reflux, and R. The value of w_k can be also determined from Rayleigh's equation

$$\lg \frac{w_n}{w_1} = \frac{1}{2.303} \int_{x_1'}^{x_k'} \frac{dx'}{y' - x'}.$$

The conjugate values x' - y' are found from the plots of the number of stages against the concentration (in molar %) using the values of n_R (see diagram 4)

Fig. 4. Part of the diagram (number of stages - concentration). A - number of stages; B - amount of CCl_4 (in molar %).



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Calculation of Binary System Rectification by Means of a Diagram of the Number of Stages Versus Concentration. Communication XV

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For the graphic integration of Rayleigh's equation, a table was compiled containing the values of x', y', $(y' - x')$, $\frac{1}{y' - x'}$, n (number of stages corresponding to the concentrations x'_1, x'_2, ... x'_k), and $(n + n_R)$. From these table data, the diagram ($\frac{1}{y' - x'}$ against x' was established (see Fig. 5), and the value of w_k was determined by means of the graphic integration of Rayleigh's equation. The experimental value of w_k and that determined with the above method differed by 0.9%. This method can also be used for the calculations of batch rectification taking into account the effect of the column holdup. It is possible that it could be used also in calculations of rectification in other types of columns besides the packed column used by the authors in their experiments. There are

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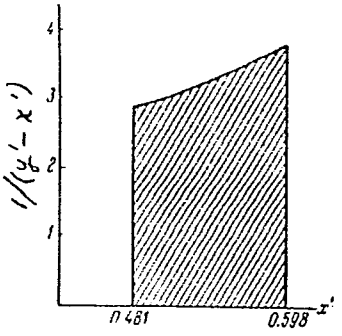
Fig. 5. Diagram $\left[1/(y' - x')x'\right]$ for the graphic integration of Rayleigh's equation.



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Calculation of Binary System Rectification by Means of a Diagram of the Number of Stages Versus Concentration. Communication XV

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SOV/80-33-2-7/52

5 figures; 4 tables; and 8 references, 1 U.K., 7 Soviet. The U.K. reference is: Rayleigh, Phil. Mag., 4, 521 (1902).

ASSOCIATION: Leningrad State University (Leningradskiy gosudarstvennyy universitet)

SUBMITTED: July 16, 1959

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BUSHMAKIN, I.N.

Methods for calculating data for plotting diagrams: number of stages-concentration. Zhur.prikl.khim. 35 no.4:855-860 Ap '62. (MIRA 15:4)

1. Leningradskiy gosudarstvennyy universitet.
(Distillation, Fractional)

BUSHMAKIN, I.N.; MOLODENKO, P.Ya.; NIKANDROVA, G.I.

Determination of liquid - vapor equilibria with the aid of a rectification column. Zhur.prikl.khim. 35 no.6:1260-1265 Je '62. (MIRA 15:7)

1. Leningradskiy gosudarstvennyy universitet.
(Phase rule and equilibrium)
(Distillation, Fractional)

BUSHMAKIN, I.N.; MOLODENKO, P.Ya.

Method of selecting the separating agent in the azeotropic rectification of binary systems. Zhur. prikl. khim. 37 [illegible]12: 2643-2653 D '64.

Distillation and rectification in the system water - formic acid - 1,2 dichloroethane. Ibid.:2653-2662

(MIRA 18:3)

1. Leningradskiy gosudarstvennyy universitet imeni Zhdanova.

BUSHMAKIN, I.N.; BALDANOVA, B.; MOLODENKO, P.V.

Equilibrium between liquid and vapor in the systems benzene – butyl acetate and carbon tetrachloride – butyl acetate. Zhur.prikl.khim. 38 no.6:1417-1419 Je '65. (MIRA 18:10)

L 21641-66 EWT(d)/EWT(l)/EWT(m)/EWP(w)/EWP(f)/EPF(n)-2/EWP(v)/T/EWP(t)/
ACC NR: AP6010264 EWP(k)/EWA(h)/ETC(m)-6 SOURCE CODE: UR/0371/66/000/001/0042/0053
IJP(c) JD/WW/JG/EM/DJ

AUTHOR: Bushmanis, A. K. (Busmanis, A.) 56 B

ORG: Institute of Physics, AN Latv. SSR (Institut fiziki AN Latv. SSR)

TITLE: Selection of optimum proportions in induction pumps with maximum efficiency

SOURCE: AN LatSSR. Izvestiya. Seriya fizicheskikh i tekhnicheskikh nauk, no. 1, 1966, 42-53

TOPIC TAGS: liquid metal pump, fluid pump

ABSTRACT: A graphic method is proposed for analytical determination of optimum geometric proportions for induction pumps with maximum efficiency. This method reduces the number of computations required for each separate modification and also reduces the number of modifications. The following parameters are assumed as given: developed head of the pump p, capacity Q, frequency of the supply current f, and also the physical constants of the liquid metal to be pumped: specific electrical conductivity σ, density ρ, kinematic viscosity ν and temperature T. Analytical formulas are derived for calculating the remaining parameters of the pump (useful power, power losses, etc.) in terms of the given quantities and the results are presented on graphs which may be used for practical solution of design problems. A table is given illustrating use of the proposed method for optimizing the geometric proportions of an

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L 24641-66

ACC NR: AP6010264

induction pump with maximum efficiency. Orig. art. has: 5 figures, 2 tables, 33 formulas.

SUB CODE: 13/ SUBM DATE: 10May65/ ORIG REF: 012/ OTH REF: 001

Card 2/2

BURSHTEIN, K.I.

Development of the research and the introduction of new technology in the most important branches of the chemical industry in the R.S.F.S.R. in 1965. Nauch.-tekh.inform. Gos.nauch.-issl.inst. nauchn. tekh.informa. 38 no.1:3-12 Ja '65.

(MIRA 18:4)

BUSHMAKIN, L.I.

Contour numeration in soil surveying. Pochvovedenie no.1:80 Ja '61. (MIRA 14:1)

1. Brestskaya oblastnaya gosudarstvennya sel'skokhozyaystvennaya opytnaya stantsiya.
(Soil surveys)

BUSHMAKIN, R.L., master.

Defects of hoisting limiters on electric pulley blocks. Energetik 5 no.2:23 F '57. (MLRA 10:3)
(Hoisting machinery) (Electric switchgear)

BUSHMAKINA, B.M., assistent; RYB'YEV, I.A., kand.tekhn.nauk

Testing thermotechnical properties of asphalt concrete. Trudy MADI no.23:111-117 '58. (MIRA 12:1)
(Asphalt concrete--Testing)

BUSHMAKINA, G.A., starshiy nauchnyy sotrudnik

The sprout fly Chortophila florilega Zett. Zashch. rast. ot vred. i bol. 8 no.1:55-56 Ja '63. (MIRA 16:5)

1. Brestskaya sel'skokhozyaystvennaya opytnaya stantsiya.
(Lupine--Diseases and pests) (Flies--Extermination)

L 1711-66 EWT(m)/EWP(w)/EWA(d)/T/EWP(t)/EWP(z)/EWP(b)/EWA(h) IJP(c) MJW/ JD/HW

ACCESSION NR: AP5021950 UR/0193/65/000/008/0012/0013
669.018:621.365.2

AUTHOR: Vasil'yev, N. Ye.; Bushmakin, Yu. A.; Kulalayev, Yu. A.;

TITLE: Experience in melting the alloy 79NM in electric arc furnaces and rolling 3.3 ton ingots of this alloy

SOURCE: Byulleten' tekhniko-ekonomicheskoy informatsii, no. 8, 1965, 12-13

TOPIC TAGS: nickel containing alloy, arc furnace, ingot, rolling mill, magnetic property, aluminum containing alloy

ABSTRACT: The Izhevsk Metallurgical Plant, in collaboration with the Novosibirsk Metallurgical Plant, has experimentally produced slabs of the alloy 79NM by rolling rather than forging. This alloy is obtained by melting Armco iron, grade N-0 or N-1 nickel, and grade Mo-1 ferromolybdenum in 20-ton electric arc furnaces (transformer power 5000 kva, melt weight 13-15 tons), and cast into 3.3 ton ingots which are air-cooled and, following the elimination of surface defects, conveyed to a hot-rolling mill (at the Novosibirsk Metallurgical Plant) for rolling into slabs with a cross sectional area of 130^{+6}x370^{+15} mm (23 passes, with reduct-

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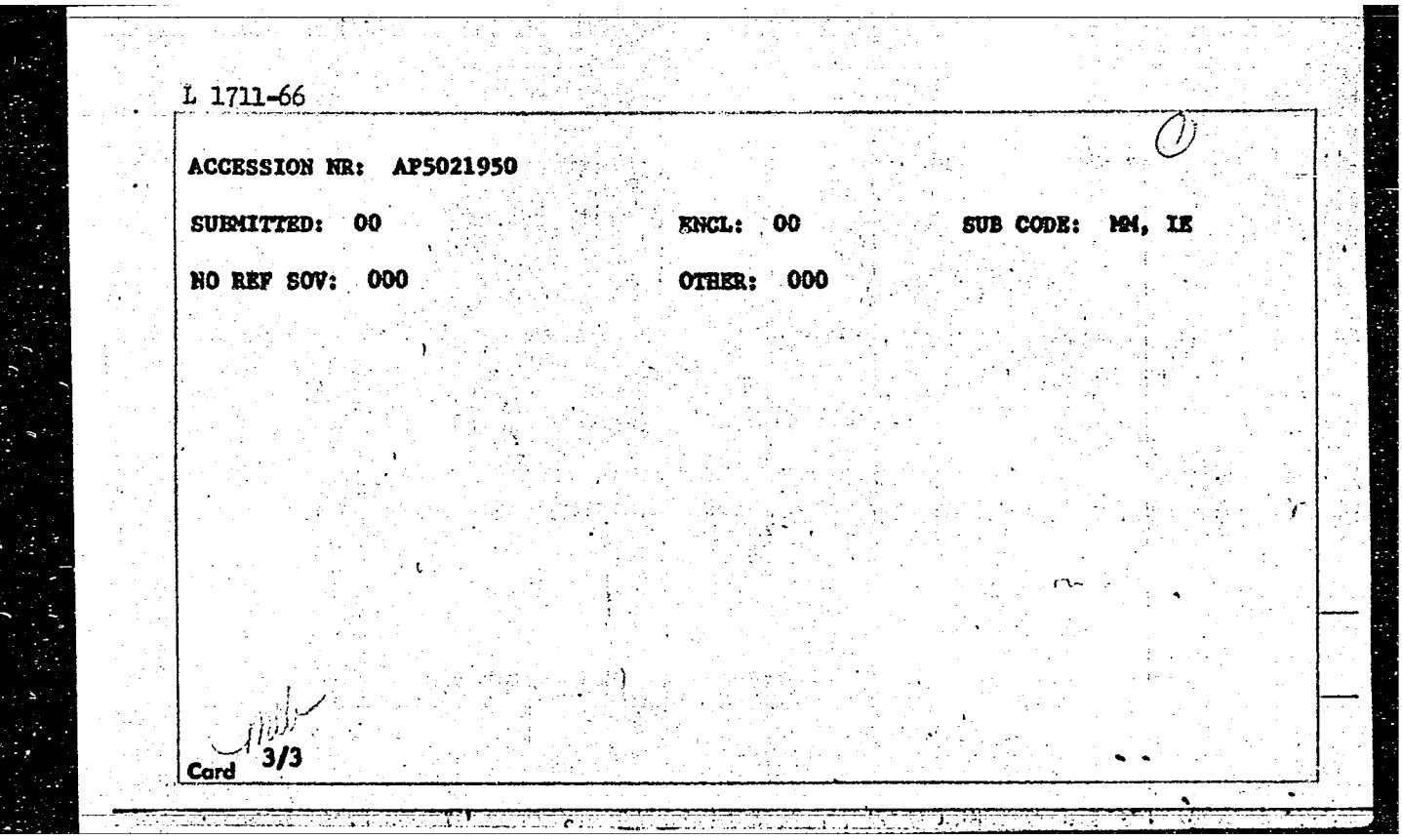
ACCESSION NR: AP5021950

ion in area of from 55 to 20 mm per pass). At the Novosibirsk Plant the slabs are reduced to a thickness of 3 mm after pickling, cutting to a width of 120-210 mm, and deburring, and then returned to the Izhevsk Plant, where they are processed into 0.1-1.0 mm thick cold-rolled strips. Tests showed that the magnetic properties of the alloy satisfy the requirements of the State Standard 10160-62 and are largely determined by the alloy's nickel content. The first results of this experiment showed that the melting techniques needed some improvement: the ingots from the melts with an excessively low titanium content displayed signs of improper shrinkage. Therefore, to obtain more compact ingots, subsequent meltings were performed on increasing deoxidation with titanium metal to 1.8-2.0 kg/ton and with aluminum metal to 0.5-0.6 kg/ton. Then the ingot metal contained 0.08-0.1% Ti and approx. 0.05% Al. Following these and certain other modifications, the production of slabs by this method was introduced on a permanent basis at the Izhevsk Plant. As a result the rolling cost at the Novosibirsk Plant could be reduced 42% compared with forged slabs and cold-rolled strip could be obtained in bundles weighing up to 500-700 kg each without being welded along their length. Orig. art. has: 1 figure, 1 table.

ASSOCIATION: none

Card 2/3



L 1711-66

ACCESSION NR: AP5021950

SUBMITTED: 00 ENCL: 00 SUB CODE: MM, IE

NO REF SOV: 000 OTHER: 000

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(N) L 10892-66 EWT(m)/EWA(d)/EWP(t)/EWP(z)/EWP(b) IJP(c) MJW/JD/HW

ACC NR: AP6000599 SOURCE CODE: UR/0133/65/000/012/1129/1132

AUTHOR: Bushmakin, Yu. A.; Bryndin, V. V.; Moskvin, N. I.; Grashchenkov, P. N.; Melikhov, P. M. 44,55 44,55 44,55 44,55 44,55

ORG: none

TITLE: Development of production techniques for Kh15N9Yu strip intended for valve springs

SOURCE: Stal', no. 12, 1965, 1129-1132

TOPIC TAGS: valve, compressor valve, valve spring, spring steel, stainless steel, precipitation hardenable steel, steel property /EI904 steel, Kh15N9Yu steel

ABSTRACT: The suitability of Kh15N9Yu (EI904) precipitation-hardenable stainless steel for flat valve springs of compressors operating in a tropical environment or aggressive gaseous media has been studied. Thirteen experimental 50-kg heats containing 0.05—0.09% carbon, 14.00—15.42% chromium, 7.70—8.63% nickel, and 0.73—1.10% aluminum, and with an initial martensite content varying from 7 to 60%, were melted in a laboratory induction furnace. The ingots were rolled into a strip 2.5 mm thick and 60 mm wide, annealed at 1050—1070C, and water quenched. Then five strips with an initial martensite content of 8, 27, 34, 45 and 60% were cold rolled with reductions up to 80% and aged at 350—500C. Two other heats with an initial martensite content of 20 and 40% received the same treatment, but prior to cold rolling were

Card 1/2 UDC: 669.14.018.27

L 10892-66

ACC NR: AP6000599

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refrigerated at -70C for 6 hr. Results of tensile tests showed that heats with an initial martensite content over 25% are not suitable for springs owing to low ductility. In steels with an initial martensite content of 5—25%, the mechanical properties can be varied over a very wide range: between 100 kg/mm^2 tensile strength at 30% elongation and 200 kg/mm^2 tensile strength at 2% elongation. For the lowest strength level, 140—170 kg/mm^2, the recommended strengthening treatment (after annealing) consists of cold-rolling with a reduction of 40—50% and aging at 400—480C for 1 hr. For the highest strength level, over 190 kg/mm^2, the annealed strip should be refrigerated at -70C prior to cold rolling and aging. Orig. art. has: 3 figures and 2 tables. [DV]

SUB CODE: 11, 13/ SUBM DATE: none/ ORIG REF: 002/ ATD PRESS: 4172

HW

Card 2/2

BUSHMAKINA I.V.

BUSHMAKINA, I.V.

Pancreatic cysts. Khirurgiia, Moskva No.2:46-48 Feb 52. (CLML 21:5)

1. Of the Faculty Surgical Clinic, Ivanovo Medical Institute.

BUCHMAKINA, L.

Chemical Abstracts
Vol. 48 No. 5
Mar. 10, 1954
Foods

Changes in the diameter of (pre)condensed milk droplets during their transformation into dry particles. N. Panasenkov and L. Buchmakina (S. M. Kirov Agr. Inst., Omsk). *Molochnaya Prom.* 14, No. 10, 34-6(1953).—In an attempt to improve the keeping quality of dried milk by decreasing the vol. of the air bubble (I) encased in a dry particle (II), theoretical calcns. were carried out to det. the effect of precondensing the milk to a relatively high-solids content on the vol. of I and vol.-wt. of II. The data show a possible inverse relation between the vol. of I and the solids content of precondensed milk droplets. It is claimed that the keeping quality of dried milk is greatly influenced by the vol. of I or porosity of II.

Vladimir N. Krukovsky

BUSHMAKINA, Z.I.

Interrelation of depressor and pressor reactions during the adaptation of reflexes to the cardiovascular system [with summary in English]. Fiziol.zhur. [Ukr]. 4 no.4:456-463 Jl-Ag '58 (MIRA 11:10)

1. Kiyevskiy meditsinskiy institut im. akademika A.A. Bogomol'tsa, kafedra normal'noy fiziologii.
(CARDIOVASCULAR SYSTEM)
(REFLEXES)

FROL'KIS, V.V.; BUSHMAKINA, Z.I.; SHCHEGOLEVA, I.V.

Mechanism of change in chemoreceptors of the blood vessels in reflex adaptation. Biul.eksp. biol. i med. 51 no.1:8-13 Ja '61.
(MIRA 14:5)

1. Iz kafedry normal'noy fiziologii (zav. - akademik AN USSR G.V. Fol'bort [deceased]) Kiyevskogo meditsinskogo instituta i laboratorii fiziolgoii (zav. - doktor meditsinskikh nauk V.V.Frol'kis) Instituta gerontologii i eksperimental'noy patologii. Predstavlena akademikom V.N.Chernigovskim.
(BLOOD VESSELS--INNERVATION) (ADENOSINE PHOSPHATES)
(RESPIRATION)